WAY TRACK and STRUCTURES

March 1937

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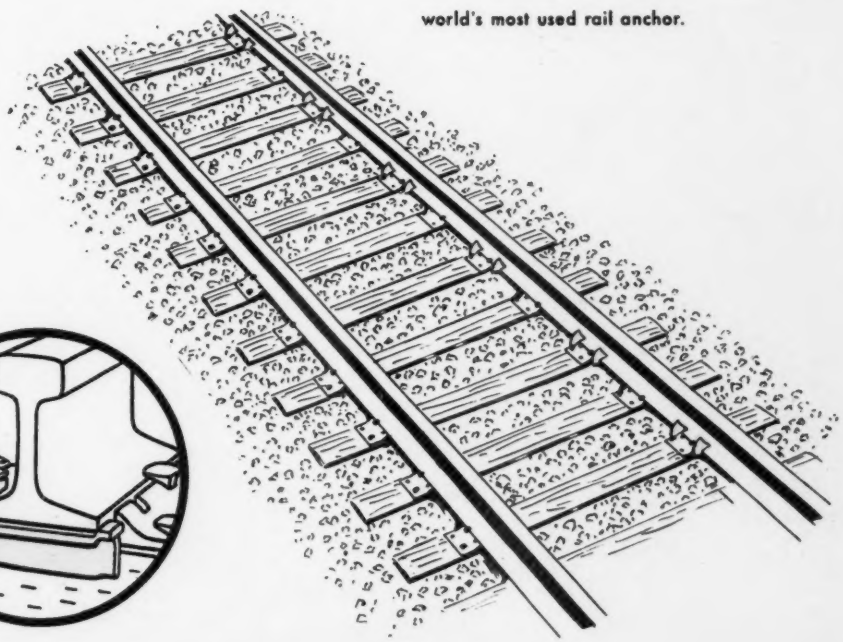
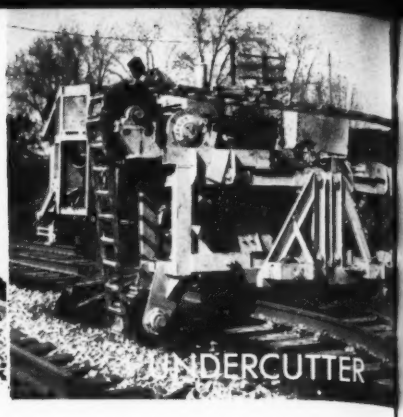
Be "FAIR" minded
when purchasing Rail Anchors

You are more than fair to yourself and your company in ordering Fair Anchors, because they are not only always dependable and efficient, but they are also the world's most used rail anchor.



THE P. & M. CO.



KERSHAW...

...First *in the Railway Maintenance Field!*

Whether it be individual performance or work in various maintenance packages, the Kershaw line of trackwork equipment truly is first in the railway maintenance field.

Why? Because Kershaw machines are designed, developed and tested on America's railroads. They have proven themselves by doing the job America's railroads want done. And at a tremendous savings, too!

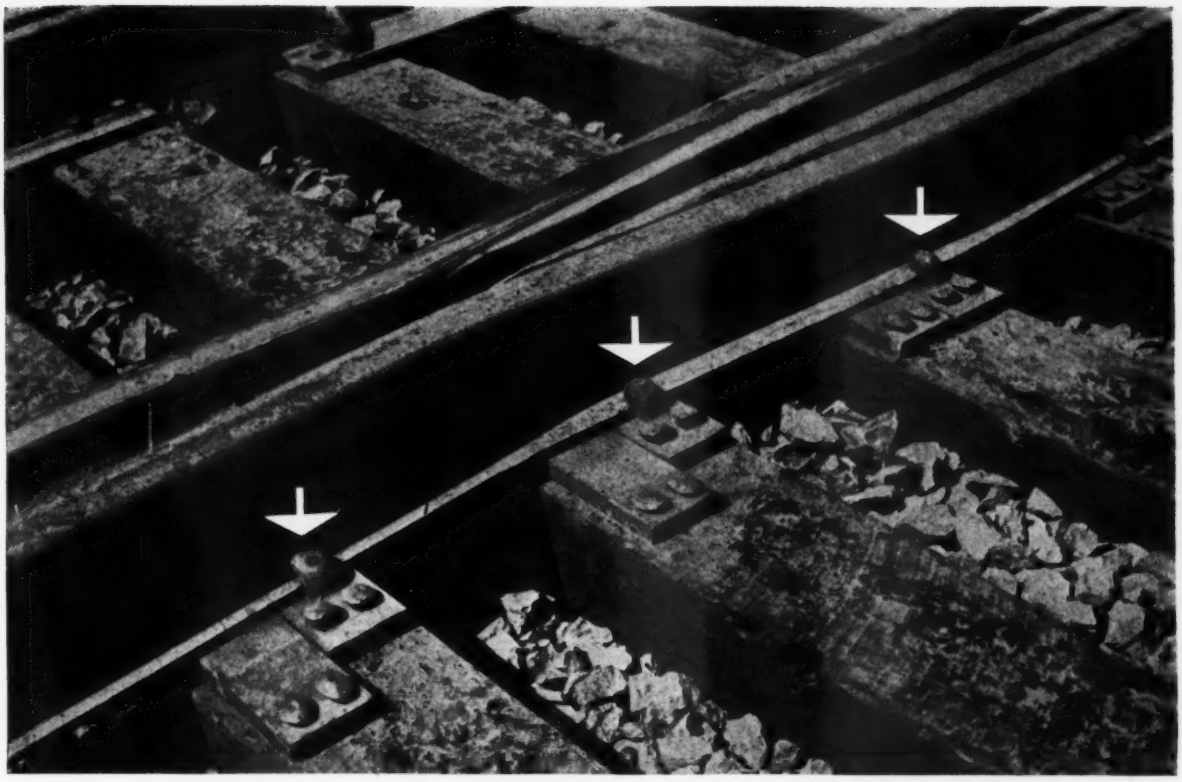
For a free demonstration of Kershaw equipment on your railroad under your operating conditions, write Kershaw Manufacturing Company or contact a Kershaw sales representative. We'll be happy to arrange it

Now... more than ever . *Recognize This Symbol of Leadership*

KERSHAW
MANUFACTURING CO. INC

P. O. Box 510

Montgomery, Alabama



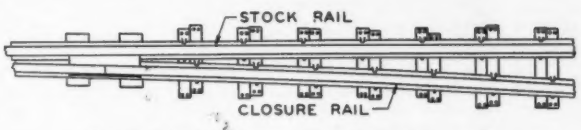
Anchoring Frogs and Switches with Hook Twin Tie Plates

The Bethlehem Hook Twin Tie Plate is a rolled-steel plate with spike holes punched to admit track spikes. At the "business" end of the plate is a husky forged hook which engages the base of the rail or frog in much the same manner as the offset head of a rail spike.

But this hook is larger and stronger than a standard spike head, providing greater bearing on the rail base. Further, because hook and tie plate are integral, the "wave" motion of the track is spread over a broader area of the tie. Thus the track spikes which anchor the plate to the tie are freed from direct pull, and the tie itself is protected from early killing.

Bethlehem Hook Twin Tie Plates are designed to be used in pairs, side by side on the ties. Any pair of Hook Twins can be adapted to almost any position in any frog installation. For this reason it is rarely necessary to store more than three or four lengths of Hook Twin Tie Plates, a welcome feature from the standpoint of your stores personnel.

Reverse-hook plates, either in pairs or in combination with standard hook plates, can be effectively used to counteract thrust at heel-ends of frogs or switches. Hook Twin Tie Plates can also improve the anchoring of tongue switches and mates, graduated riser switches, tee guard rails and low-angle crossings.



Standard-hook plates and reverse-hook plates can be teamed to take up thrust through heel-end of a switch.

Hooks may be specified "low" for contacting rail bases, or "high" for cast manganese sections. The most popular lengths are 23, 27, 31, and 35 in., in thicknesses of ¾, ⅞, and 1 in.; all plates are 4 in. in width. The Bethlehem office nearest you will be glad to send you our illustrated Folder 613 on this subject, or to arrange for a representative to discuss details with you.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM STEEL

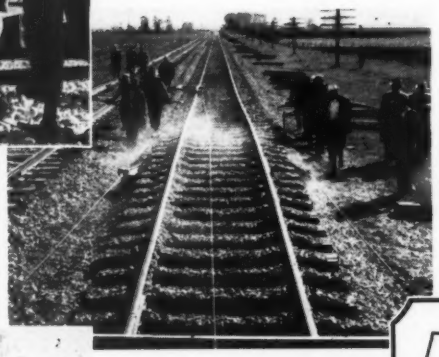
Published monthly by Simmons-Boardman Publishing Corporation, Emmett Street, Bristol, Connecticut, with editorial and executive offices at 79 West Monroe Street, Chicago 3, Illinois; 30 Church Street, New York 7, New York. Subscription prices: to railroad employees only in the United States and Possessions, and Canada, one year $2.00. Second class mail privileges authorized at Bristol, Conn. Volume 53, No. 3.

Burlington Route

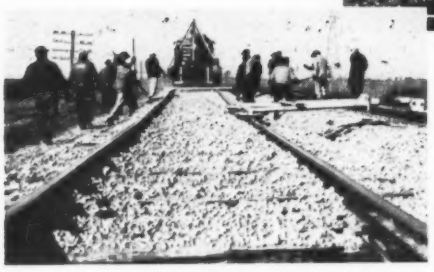
SURFACES DOUBLE TRACK *the easy way!*

When it comes to track resurfacing, the Chicago, Burlington & Quincy Railroad is sold on the MANNIX SLED. This Mannix-perfected equipment is saving time and money . . . helping to keep double track in top condition for the famous "Burlington Zephyrs". Write, phone, or wire Mannix International . . . discover how rental of the Mannix Sled can speed your resurfacing program.

With the Sled under the track, the operation begins. Ballast used here is steel mill slag.



First pass of Sled has given track a 4" raise. Second pass, after ballast distribution, now gives a further 4" lift.



Mannix Sled is followed by Mannix Double-Track Liner, assuring distortion-free track behind sled operation.

MANNIX INTERNATIONAL INC.

4020 Minnetonka Boulevard, Minneapolis 16, Minnesota Phone: WAlnut 7-9411

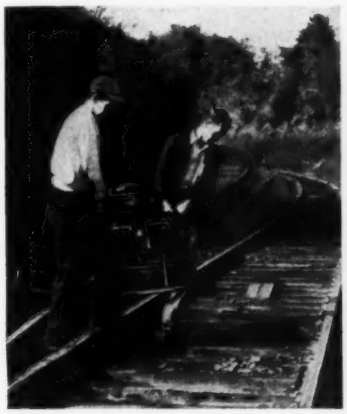
Ingersoll-Rand

SPOT-AIR

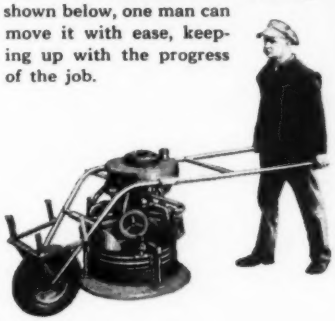
36 cfm

SO SMALL - SO LIGHT SO EASY TO MOVE!

no other gasoline powered compressor like it!



With lifting bar in place, two men can easily carry the SPOT-AIR across tracks or over obstacles. And with the wheelbarrow mounting shown below, one man can move it with ease, keeping up with the progress of the job.



...yet Spot-Air provides ample, low-cost power for FOUR TIE TAMPERS

For railway maintenance work you need a compressor you can take anywhere—operate anywhere. That's the Ingersoll-Rand SPOT-AIR—the smallest, most *portable* self-powered compressor ever developed. It weighs only 265 pounds, ready to run. It takes up only 27″ by 27″ of floor space on a section car. One or two men can easily move it from place to place on the job.

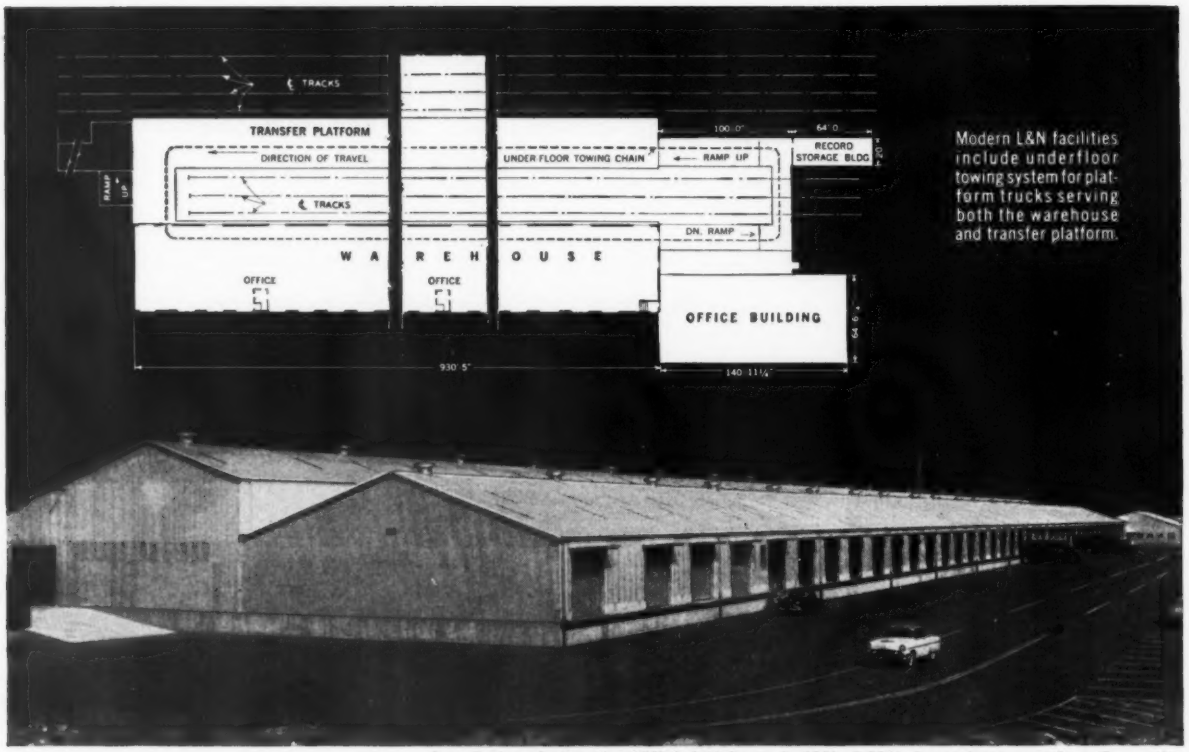
The SPOT-AIR is built to stand up in heavy duty service. Its air-cooled engine operates under extreme weather conditions with no danger of freezing or overheating. Simplicity of design, with heads, valves, carburetor and magneto all readily accessible, reduces maintenance time to the minimum.

For maintenance of way, bridge construction, grade crossings, signal repairs and a host of other railroad jobs—the SPOT-AIR gives you dependable, low-cost air power, anywhere, any time. For full details, send for a copy of new Bulletin 2264-B.

Ingersoll-Rand

2-308 11 Broadway, New York 4, N. Y.

AIR POWER AND AIR TOOLS FOR LOW COST MAINTENANCE OF WAY



Overall size of attractive L&N freight house is 138′ x 1,030′. Armco ALUMINIZED STEEL® covering material (a special hot-dip aluminum coated steel) requires no expensive painting or other finishing.

Truss-Type Armco Steel Buildings

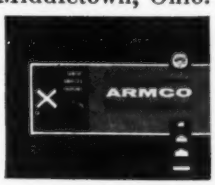
Meet Big Building Needs for L & N

Radnor Yard, near Nashville, Tennessee, is the site of one of the largest factory-made buildings for railroad use . . . a truss-type Armco Steel Building. The multiple-span structure serves as modern freight house facilities for the Louisville & Nashville.

Truss-type Armco Buildings provide an efficient yet low-cost way to solve big building problems. With clear span widths up to 100′ and practically unlimited lengths, you can select the exact size you need . . . and easily fit it to your specific requirements. The post-free interior gives complete freedom of floor plan layout.

What about costs? You get all the economies of a mass-produced building. All parts are prefabricated to eliminate waste. Also, your savings continue year after year with low maintenance costs.

For more information on the complete line of Armco Steel Buildings for railroad use, write us for Folder 11856. Armco Drainage & Metal Products, Inc., 3467 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corp.



ARMCO STEEL BUILDINGS

VERONA SPECIAL
VERONALLOY
NUT LOCKS...

Maintain great bolt tension through a wide reactive range. This is made possible by the non-fatiguing characteristic of Veronalloy Steel.

Keep rail joint assemblies in proper condition by maintaining high bolt tension.

Reduce angle bar wear and rail batter. Every Veronalloy Nut Lock is heat-treated and tempered, and receives a full compression test before shipment.

Saves track maintenance expense by eliminating necessity for periodic tightening of bolts, and joint tamping.

Preferred since 1873

Pages from an early catalog of Verona Railroad Track Tools are reproduced above. They show that, in 1893, there were in use—

199,569,202
VERONA NUT LOCKS!

Woodings-Verona
TOOL WORKS

Main Office and Plant: **VERONA, PA.** • *Sales Offices:* **CHICAGO, ST. LOUIS**

Restore visibility to blind crossings with a new "crew" ... *Dow Brush and Weed Killers*

Blind crossings like this used to be quite common. Heavy growth of weeds and brush caused poor visibility for motorists at grade crossings—and often fostered fatal accidents.

But today the modern line can make its road safe and attractive with chemical vegetation control. Take the roadbed itself. Chemicals keep weeds from impeding drainage and causing haz-

ardous footing for brakemen—and they do it at the least possible cost. And it's just as important to control vegetation along the entire right of way. Fire, a threat equally as dangerous as automobile accidents, can damage your communication poles and bridges, as well as neighboring fences, crops and timber.

Prevent these hazards the easy, economical way with Baron*, Radapon* and other herbicides in the complete Dow line. Start programing a weed-free season now with your own "crew" of Dow brush and weed killers.

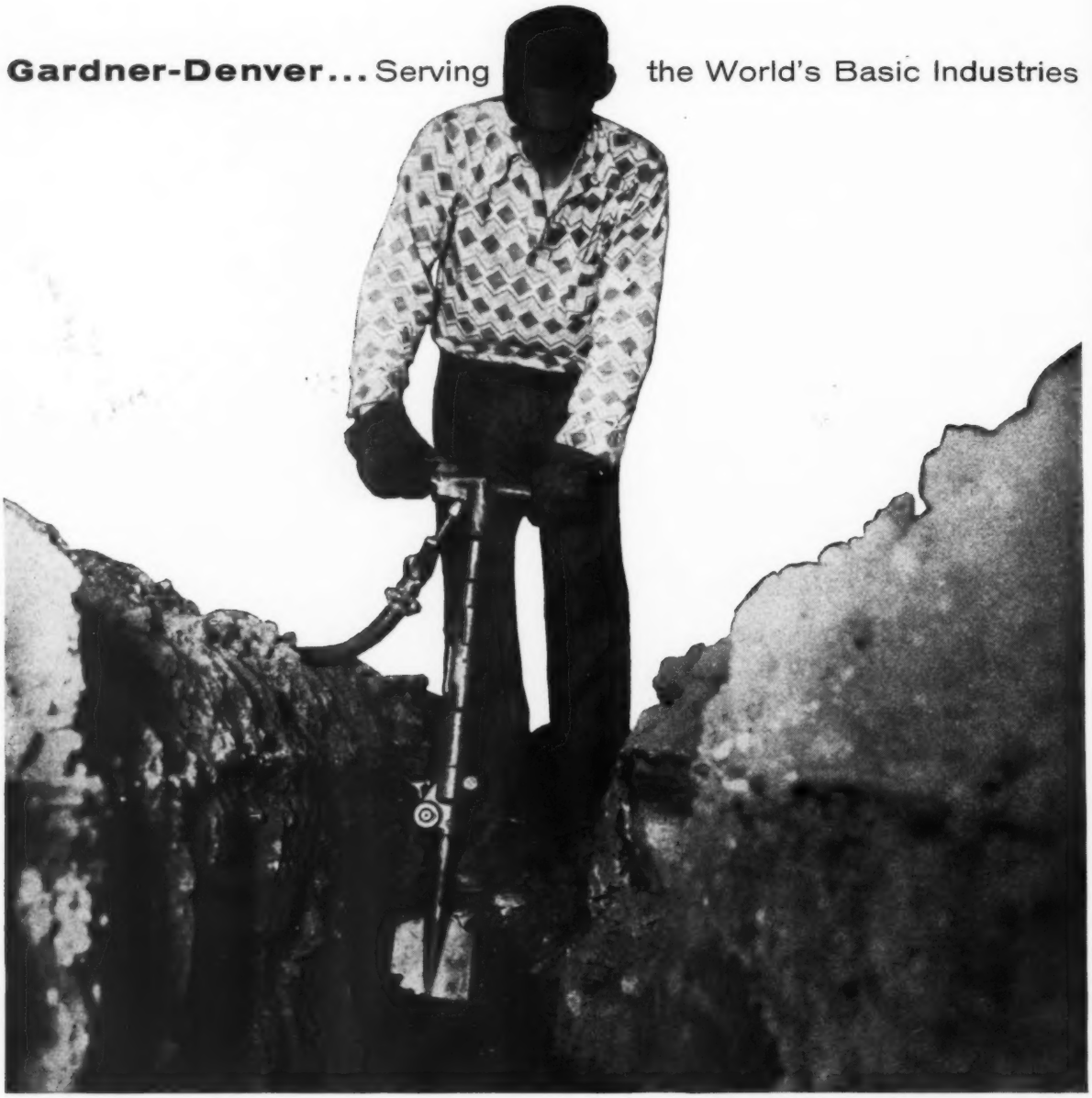
Professional applicators can help you save money. Their experienced, trained personnel know how to use the right chemicals at the right time. Their specialized equipment gives you more mileage per gallon of chemical. Be sure to choose an applicator who uses Dow herbicides. That way you know he has the right tools for the job.

We'd like to send you more information and the name of a qualified Dow distributor. Write today to THE DOW CHEMICAL COMPANY, Midland, Michigan.

*Trademarks of The Dow Chemical Company

YOU CAN DEPEND ON DOW

Gardner-Denver... Serving the World's Basic Industries



Model C127 trench digger goes to work.

Fast trenching . . . and lots of it

Easy does it—with a G-D Paving Breaker.

Gardner-Denver Trench Digger cuts through heavy dirt and clay like butter. Gets a tough job done—fast. Every Gardner-Denver maintenance tool is designed to save time . . . built to stand the gaff and stay on the job.

Trench diggers • Clay spaders • Paving breakers • Sheeting drivers • Rock drills • Utility drills • Backfill tampers • Air hoists • Air line oilers • Sump pumps • Portable compressors to run them all. Send for descriptive bulletins.

GARDNER - DENVER

THE QUALITY LEADER IN COMPRESSORS, PUMPS, ROCK DRILLS AND AIR TOOLS FOR CONSTRUCTION, MINING, PETROLEUM AND GENERAL INDUSTRY

Gardner-Denver Company, Quincy, Illinois

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MECOLUBRICATION

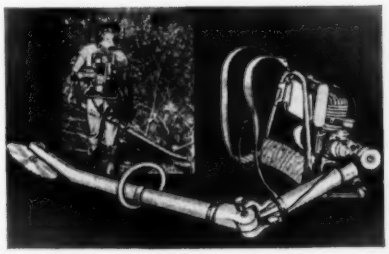
The Majority of Railroads on the North American Continent

. . . use MecoLubrication. It has improved curve safety and operating economy increasingly ever since the first lubricator of this type was installed more than a quarter of a century ago. MecoLubrication is used ahead of curves carrying heavy loads and those with trains operating at high speeds. By greasing the high rail, MecoLubrication makes higher speeds safe and also lengthens curve rail and locomotive wheel flange life two to four times.

Maintenance Equipment Company
Division of Poor and Company
RAILWAY EXCHANGE BUILDING · CHICAGO 4, ILLINOIS

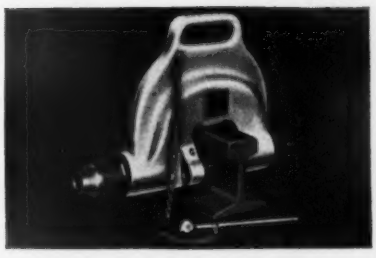
G-1314-R

MACK REVERSIBLE SWITCH POINT PROTECTOR
Prolongs the life of switch points about 4 times; then is reversed and again extends the switch point life for another similar period.



BRUSH CUTTER
Cuts right-of-way maintenance costs. One operator with the new, light-weight, Southworth can do the work of eight men using brush hooks or scythes. Extreme maneuverability, "work horse" power, light-weight are important advantages.

MECO POWER RAIL LAYER
Reduces labor cost to a minimum in laying Standard Rails, Long Rails or Continuous Welded Rail. Operates efficiently with small gang.



VELOCITY POWER RAIL PUNCH
Takes only an instant to punch clean, smooth hole for track bolts. Needs no electricity, compressed air, hydraulic power; operates from small blank cartridge; no open flash or recoil. Only one major moving part, the piston.

Picture courtesy of N.Y.N.H. & H.R.R.Co.

BIRD SELF-SEALING TIE PAD AFTER 5 YEARS SERVICE is removed for inspection. Pad had to be pried from tie owing to tenacious seal that is characteristic of all Bird Tie Pads. Reapplied, and becoming resealed after inspection, the Bird Tie Pad is good for many additional years of protective service.

Slash your tie costs 50% with BIRD Self-Sealing TIE PADS

FACTS YOU SHOULD KNOW ABOUT BIRD TIE PADS

It is common knowledge that moisture and abrasive materials destroy the supporting power of the wood under the tie plates and the holding power of the spike wood.

The Bird Self-Sealing Tie Pad was specifically developed to combat these destructive agents. *For that reason, it is entirely different in design, construction and function from any other tie pad on the market.*

This difference lies in the ability of the Bird tie pad to maintain dimensional stability. It cannot stretch or compress under passing wheel loads . . . so that it provides a constant, unbroken seal.

The Bird Self-Sealing Tie Pad completely and permanently seals out moisture and abrasives . . . the *causes* of decay under the plates . . . and, in addition to this, it prevents mechanical wear by acting as a buffer between the tie plate and the tie.

As specialists in the scientific preservation of wood for much of our 161 years in business, we are qualified to help you extend the service of your ties in track.

WHERE

- On the joint and shoulder ties of insulated joints.
- On new or older bridge decks.
- On switch timbers.
- Under crossing frogs.
- Through highway grade crossings and station platforms.
- On curves to insure holding track to gauge and surface.
- With smaller tie plates.
- Out-of-face with new or relayer rail.
- On pile cut-offs.

RESULTS

- You get 50% extra life from new ties.
- You get twice the normal remaining life expectancy from old ties that can be adzed to a smooth surface of sound wood.
- You save on gauge, line and surface maintenance costs in addition to savings on tie life.

WHEN

You start saving as soon as you start using Bird Self-Sealing Tie Pads. Bird's is the original self-sealing tie pad . . . proven by years of in-track service. Write for further information, today . . . Bird Tie Pads, Dept. HTS-3, East Walpole, Massachusetts.

BUY THE BEST BIRD & SON, inc. Established 1795 **BUY BIRD**

ONE DOSAGE of DRY Nalco H-174 for ALL-YEAR WEED CONTROL

Low dosage — usually a small fraction of that of other "apply dry" formulations — is a big advantage you get with H-174. And it's easily explained: Nalco H-174 has an unusually high concentration of powerful killing ingredient. *You get much more killing power with much less chemical to transport and apply!*

Nalco H-174 is effective whenever you apply it, but you can get full advantage from this powerful herbicide by spreading a single dosage about 2 weeks *before* weeds begin to emerge. H-174 will keep them down all year long, eliminating unsightly and inflammable weed debris, preventing re-growth and mid-season seeding.

Spreading *dry*, granular Nalco H-174 is a fast, simple operation. No mixing, spraying, or dilution . . . ready to use as it comes from bag or convenient shaker box . . . distribute by hand or with mechanical spreaders . . . For better weed control, plan on using Nalco H-174!

H-174 is one of a complete line of Nalco weed control chemicals, both dry and liquid, in wide use by railroads and industries throughout the world.

GEARED TO PROGRESS P R I MEMBER

NATIONAL ALUMINATE CORPORATION
SPRAY SERVICES DEPARTMENT

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Nalco®

PRODUCTS . . . SERVING INDUSTRY THROUGH PRACTICAL APPLIED SCIENCE

Year after year, mile after mile conventional rail is being replaced by trouble-free, continuous rail.

Longer rail life at LESS COST WITH "RIBBONRAIL" SERVICE

Leading railroads throughout the nation are eliminating the expense of assembling and maintaining rail joints. Here are some of the savings now possible with LINDE'S RIBBONRAIL SERVICE.

1. Reduces Overall Maintenance. There are no angle bars, bolts, nutlocks, and copper bonds to install or replace. Maintenance on rolling stock is less too. Wear and tear on motor housings, car wheels, axles, and bearings is substantially cut down.

2. Increases Track Life. The smooth continuous bond does away with battered rail ends . . . and trouble from loose, out-of-line, or worn rail joints is eliminated.

3. Improves Rail Riding Quality. By reducing the operating vibration, continuous rail decreases spillage, and vastly improves riding comfort.

LOOK TO "LINDE" . . . the leader in continuous rail welding, and plan your RIBBONRAIL SERVICE program now. Call or write the Railroad Department of LINDE AIR PRODUCTS COMPANY.

RAILROAD DEPARTMENT

Linde Air Products Company

A Division of Union Carbide and Carbon Corporation

30 East 42nd Street UCC New York 17, N. Y.

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In Canada: LINDE AIR PRODUCTS COMPANY

Division of Union Carbide Canada Limited, Toronto

The terms "Linde" and "Oxweld" are trade-marks, and "Ribbonrail" is a service-mark of Union Carbide and Carbon Corporation.

Supplying to railroads the complete line of welding and cutting materials and modern methods furnished for over forty years under the familiar symbol - - -

25% Lighter...

and still a heavyweight lifter!

WESTERN'S NEW ALUMINUM TRACK JACK

MODEL NO. 514-A

High-powered, fast-moving mechanized track raising and tamping crews can't advance any faster than the gangs working ahead of them. This is where Western's new aluminum track jacks really shine, keeping track crews moving forward at a high rate of efficiency. Regular section men like these jacks, too, because they are easier to handle.

MODEL 514-A FEATURES

Weight, only 32 pounds.
Lift, 5 inches.
Closed Height, 11 inches.
Frame, high strength aluminum alloy.
Safe, positive ratchet trip mechanism.
Rigid bail handle (horn type optional).
Capacity, *standard* 15 tons, on head or toe.
Base area, over 66 square inches, heavily ribbed for sure footing.

8810

Write for Details
on Model 514-A and Western's Complete Line of Track Jacks

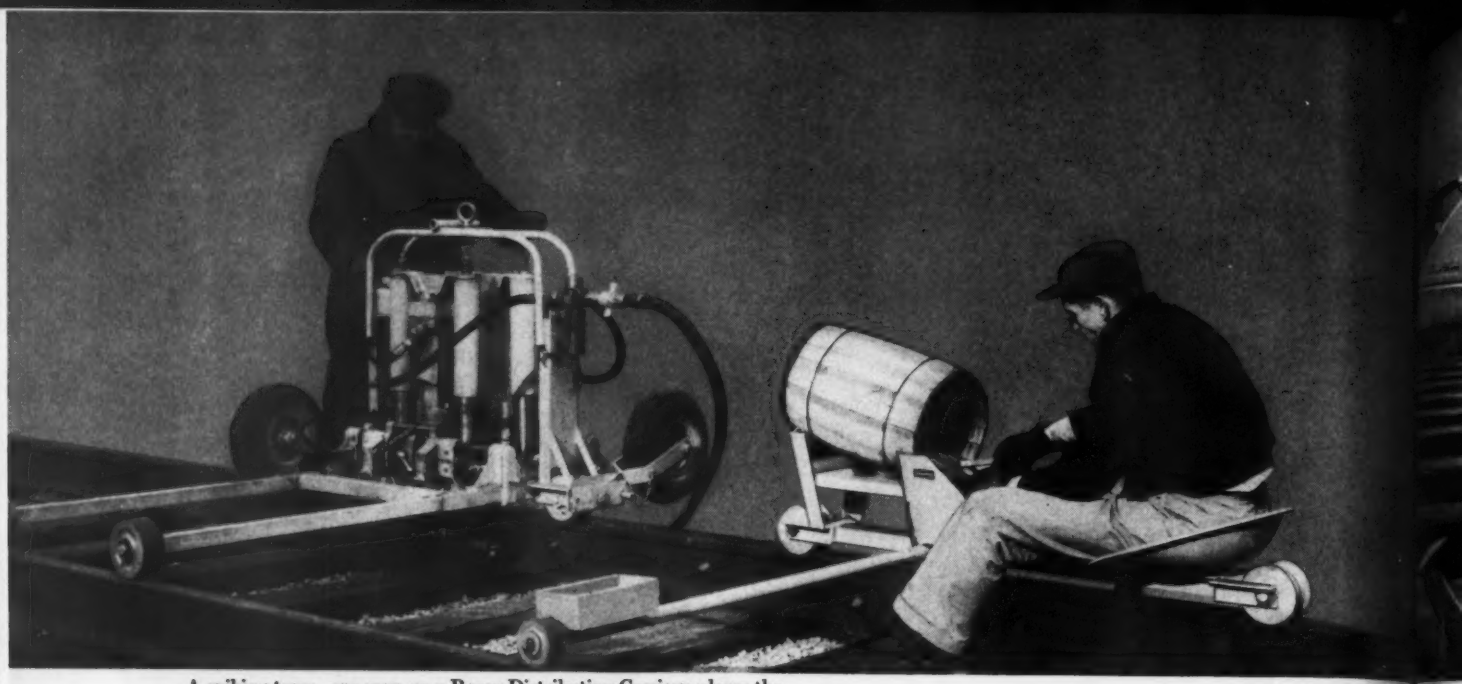
WRRS

WESTERN RAILROAD SUPPLY COMPANY

Maintenance-of-Way Division

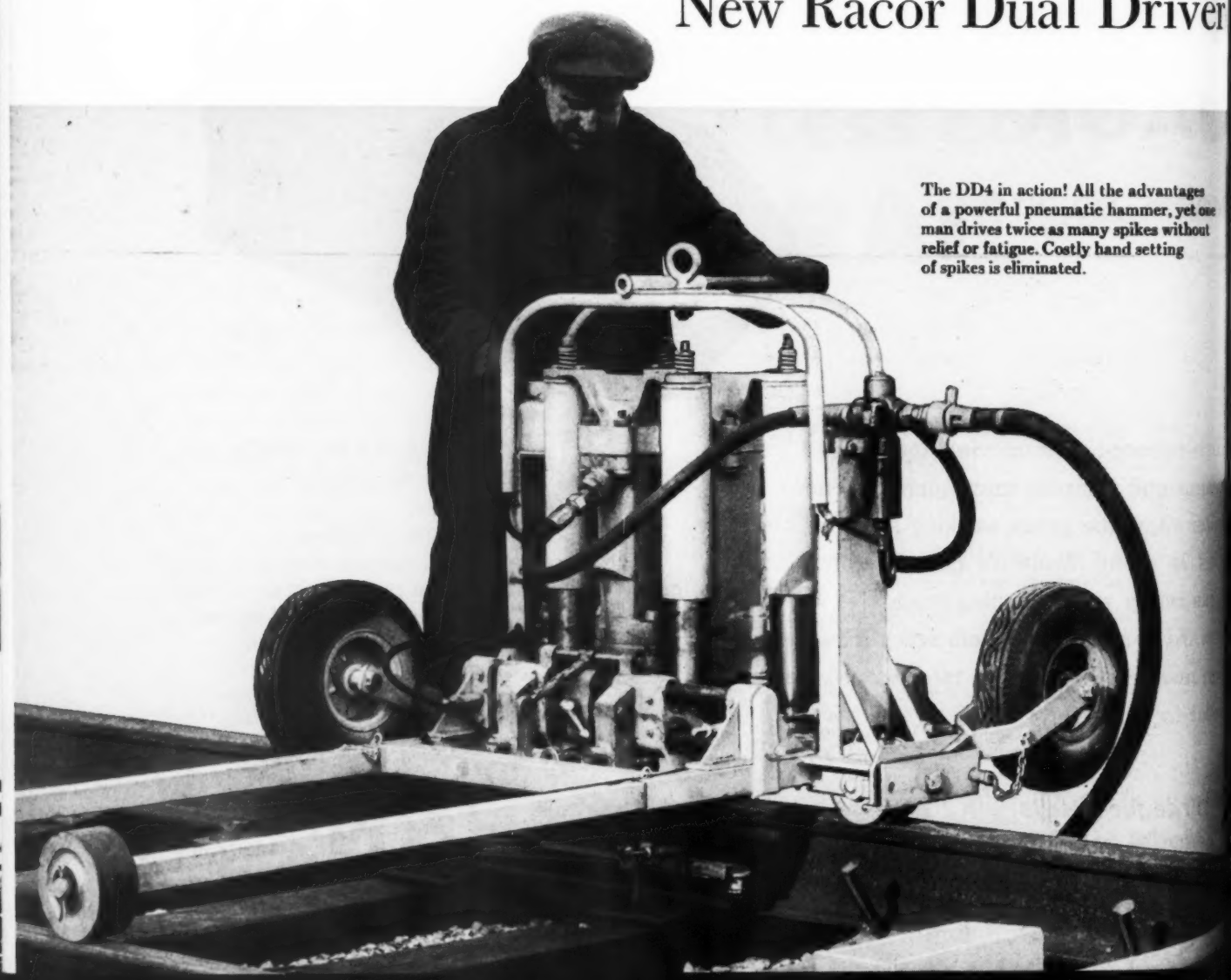
2400-2434 South Ashland Avenue · Chicago 8, Illinois

IN CANADA: Melville Machinery Co., Ltd., 738-740 Mountain Street, Montreal 3, Quebec

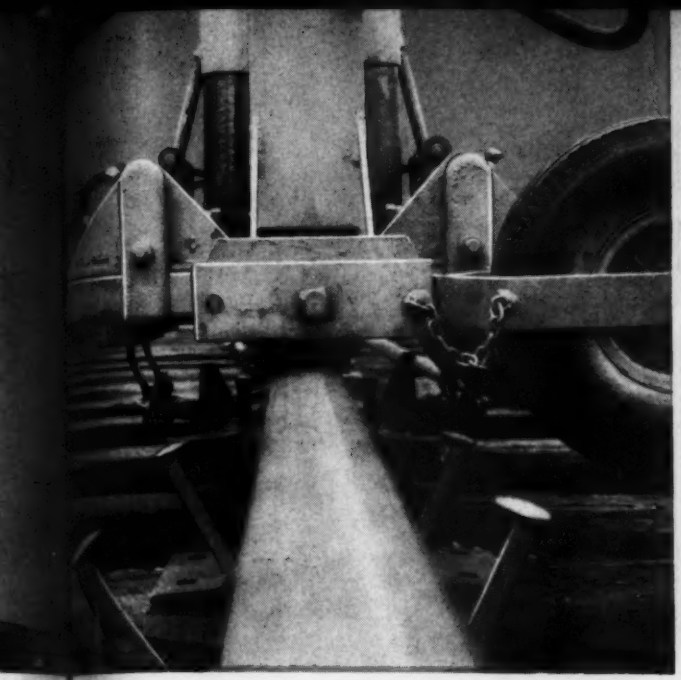


A spiking team—one man on a Racor Distributing Carriage places the spikes loosely in the line spike holes. Another man drives two spikes at once by operating the control handle of the DD4. Release of the control handle readies the Dual Driver for the next pair of spikes.

New Racor Dual Driver *cut*



The DD4 in action! All the advantages of a powerful pneumatic hammer, yet one man drives twice as many spikes without relief or fatigue. Costly hand setting of spikes is eliminated.



The spikes are automatically picked up and held vertical for driving by the Dual Driver. The spikes may be leaned either toward or away from the rail as shown here.

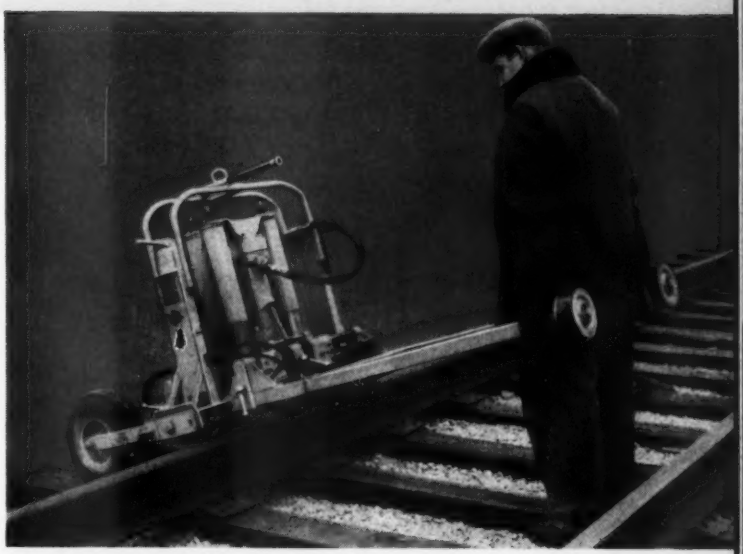
iver *cuts line spiking costs!*

Actual experience on many miles of track has *proven* that the Racor Dual Driver DD4 effects substantial reduction in line spiking costs:

One man can easily drive at least twice as many spikes as any other spike driver. After spikes are distributed to the tie plate holes, the DD4 positions them for driving, drives two spikes at once, and automatically resets for the next pair of spikes.

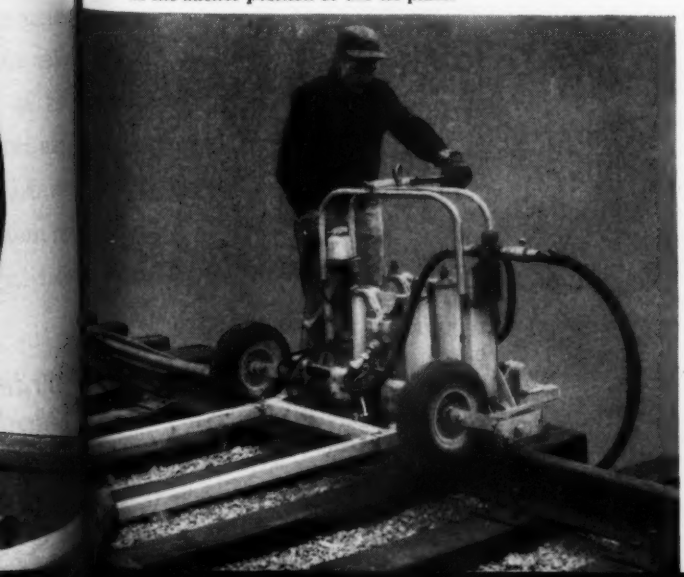
The DD4 can also drive Racor Studs!

Why not see how this new Racor Dual Driver can best fit into your own maintenance-of-way plans? Your Ramapo representative will be glad to consult with you about your road's specific conditions and requirements.



The Racor Dual Driver is easily removed from track.

Also drives Racor Studs! The Racor Dual Driver can quickly be adapted in the field for driving Racor Studs in the anchor position of the tie plate.



AMERICAN
Brake Shoe
COMPANY

RAILROAD PRODUCTS
DIVISION

230 PARK AVENUE,
NEW YORK 17, NEW YORK

A-8237

RAILWAY

TRACK and STRUCTURES

Subject:

Dear Readers:

Young Adult with a Future

Every year this question comes up in our office: Should we continue to emphasize mechanization in our March issue and should we continue to call it the Equipment Economies Number?

This double-barreled question, in itself, is probably of little concern to you. But the line of reasoning we follow in making up our minds about it is linked with developments that are of direct interest to you.

It was 'way back in 1922 that this magazine began to devote its March issue each year to the subject of labor-saving equipment. Thirty-five years is a long time for a publication to keep hammering away at the same theme. You might think that, after working over the same ground for so many years, there wouldn't be anything really worthwhile left to talk about. But that isn't the case. Actually the subject is of even greater importance and significance today than it was then.

How does it happen that a subject can take on new freshness as the years roll by? We can find out by making this comparison between conditions in 1922, when the first Equipment Economies number was published and the situation today:

In 1922—Only a few power-driven devices were available. Motor cars, air tamping guns, ditchers, spreaders, rail layers—these just about made up the entire list. The field was thus wide open for further development. But actually there wasn't too much thinking about the future because there was no basis for predicting further developments in mechanization. There was hardly any foundation of technological progress to build on and there was no established pattern of development to project into the future. There was probably a vague hope that further progress would be made, but that's about all.

It just isn't possible to predict the future of a new-born infant because his character and ideas haven't taken definite shape. That was the status of mechanization in 1922.

In 1957—Mechanization has become something of a science. Specialized machines, reflecting an advanced state of technological development, are now available and have become an integral part of the maintenance-of-way picture. Mechanization has, in fact, reached adulthood, but it is a young adult, whose future, in outline at least, can be foreseen.

We can make this statement because there is an established pattern of progress that can be projected into the future. There is a momentum in the development and perfection of machines that is certain to bring new and better equipment. New concepts in track machinery are a frequent occurrence, and on the drawing boards are still more advanced types whose introduction to the trade is only a matter of time. As for B&B equipment, there is a growing conviction (see page 70) that opportunities for the development of new and specialized machines are about to be tapped.

Thus, rather than having lost its freshness, the subject of mechanization has taken on new luster with the passage of time. The future will see important new developments. We can see no alternative but to continue publishing our Equipment Economies Number as a means of giving these developments the attention they deserve. MHD

ORTON

THE MOST POWERFUL NAME IN CRANES

Fifty years of experience applied directly to your handling problem, because *every* ORTON crane is literally *custom-built*, incorporating the most modern tested features. *Custom-built* quality and utility at *production-line* prices and delivery—that's ORTON.

This ORTON DIESEL WRECKER is the most modern, most highly efficient crane being built today; an innovation in handling ease. In addition to the Torque-Control fluid clutch and air-operated controls, the entire hoist operation is ball-bearing equipped throughout, enabling the operator to hold the maximum load with reasonable foot pressure and to apply absolutely smooth friction braking without chatter. Safe lowering of the load is also assured by overhauling the torque converter.

Heavy loads no longer require a big, awkward crane. The ORTON Big Hook does *more* work with less effort . . . less operator fatigue. The ORTON double clutch construction allows the operator to slew or travel in either direction while hoisting or lowering. All operations are entirely independent of each other.

Torque-Control means wear control as well as power control. Machine and man last longer. Torque-Control allows the load to be lowered smoothly . . . keeps it completely under power control.

CONFORMS TO THE RAILROAD DIESEL PROGRAM

A Cooper's Rating of E-45 for a 160-ton, 12-wheel machine—designed to handle the *heaviest* loads with *minimum* axle load.

ORTON CRANE AND SHOVEL COMPANY
[illegible] S. DEARBORN STREET [illegible] CHICAGO 5, ILLINOIS

Send the postage-free card for details, capacities, etc. We want to start with your requirements.

ORTON CRANE & SHOVEL CO.
608 S. Dearborn St., Chicago 5, Ill.

Gentlemen:

I am interested in additional information. Please send me facts on:

- ■ **Diesel Wrecker**
- ■ **Rubber-Tired Crane**
- ■ **Combination Wrecker-Pile Driver**
- ■ **Locomotive Crane**

Other specific uses or requirements

_____

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NAME _____ **POSITION** _____

RAILROAD _____

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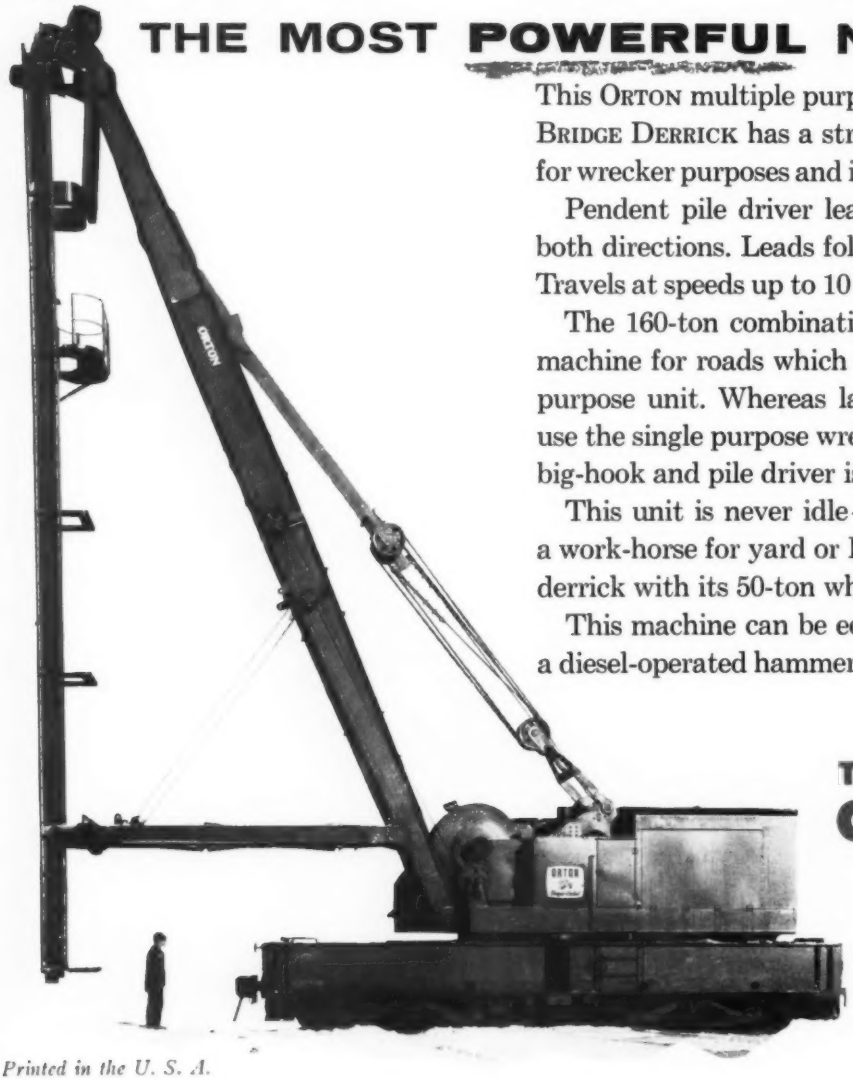

This ORTON multiple purpose DIESEL WRECKER, PILE DRIVER and BRIDGE DERRICK has a straight wrecker boom which can be used for wrecker purposes and is long enough for use as a bridge derrick.

Pendent pile driver leads are furnished, permitting batter in both directions. Leads fold automatically when boom is lowered. Travels at speeds up to 10 miles per hour on its own power.

The 160-ton combination wrecker and pile driver is the ideal machine for roads which cannot justify the purchase of a single purpose unit. Whereas larger roads find it more economical to use the single purpose wrecker for main line use, the combination big-hook and pile driver is just the answer for branch line use.

This unit is never idle—when it's not on emergency use, it is a work-horse for yard or B&B use. It can also be used as a bridge derrick with its 50-ton whip fall block.

This machine can be equipped for use with an air-operated or a diesel-operated hammer.

Printed in the U. S. A.

THE ORTON combination

DIESEL WRECKER, PILE DRIVER and BRIDGE DERRICK

CONSTRUCTION FEATURES

Welded car-body—rigid frame—power-operated outriggers. 75 to 250 ton capacities. Sealed anti-friction bearings throughout. *No bronze bushings.* Hoist operation *ball-bearing* equipped throughout, double clutch system—all operations entirely independent of each other.

SAFETY FACTORS

Responsive, air-operated controls. Designed to *increase* crane and operator efficiency; to *decrease* operator fatigue. Worm gear boom hoist—*impossible for boom to lower accidentally!*

Lowers heavy loads by overhauling the torque converter—constantly under power control.

ORTON CRANE & SHOVEL CO.
608 S. Dearborn St., Chicago 5, Ill.

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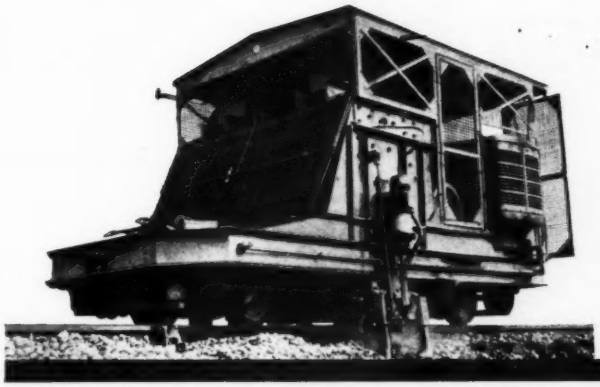
For Track at its Level Best . . .



PULLMAN-STANDARD

Power Ballaster

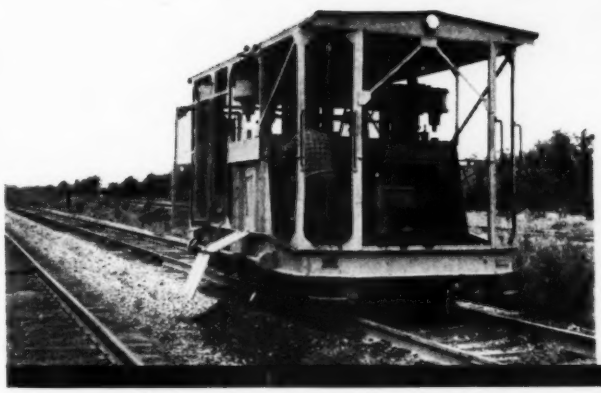
With a production rate of 500 to 700 feet an hour, a Pullman-Standard Power Ballaster, run by a single operator, can be efficiently manned by a crew of 10 to 15 men. Case history studies made on 14 railroads prove that this unit will give more feet of finished tamped track per hour, with less labor and maintenance, than any other production tamper.

PULLMAN-STANDARD

Power Cleaner

and Winch Car Team

For the first time both track shoulders can be cleaned simultaneously at 1000 to 1200 feet per hour with only four men. Even in multiple track territory, the shoulder plus half the six-foot are cleaned to a depth of eight to ten inches below the tie base at the same high rate and with the same low labor complement. Your ballast cleaning costs can be reduced by as much as 50%.



PULLMAN-STANDARD

Power Cribber

The Pullman-Standard Power Track Cribber gives you two cribs a minute, with a single operator. With a normal production rate of 100 to 225 track-feet per hour, its interchangeable 4-, 5-, and 6-inch digger tips enable it to crib efficiently and economically in any type of ballast, regardless of cementation.

YOUR NEEDS CREATE THE PULLMAN "STANDARD"

PULLMAN-STANDARD

CAR MANUFACTURING COMPANY

SUBSIDIARY OF PULLMAN INCORPORATED

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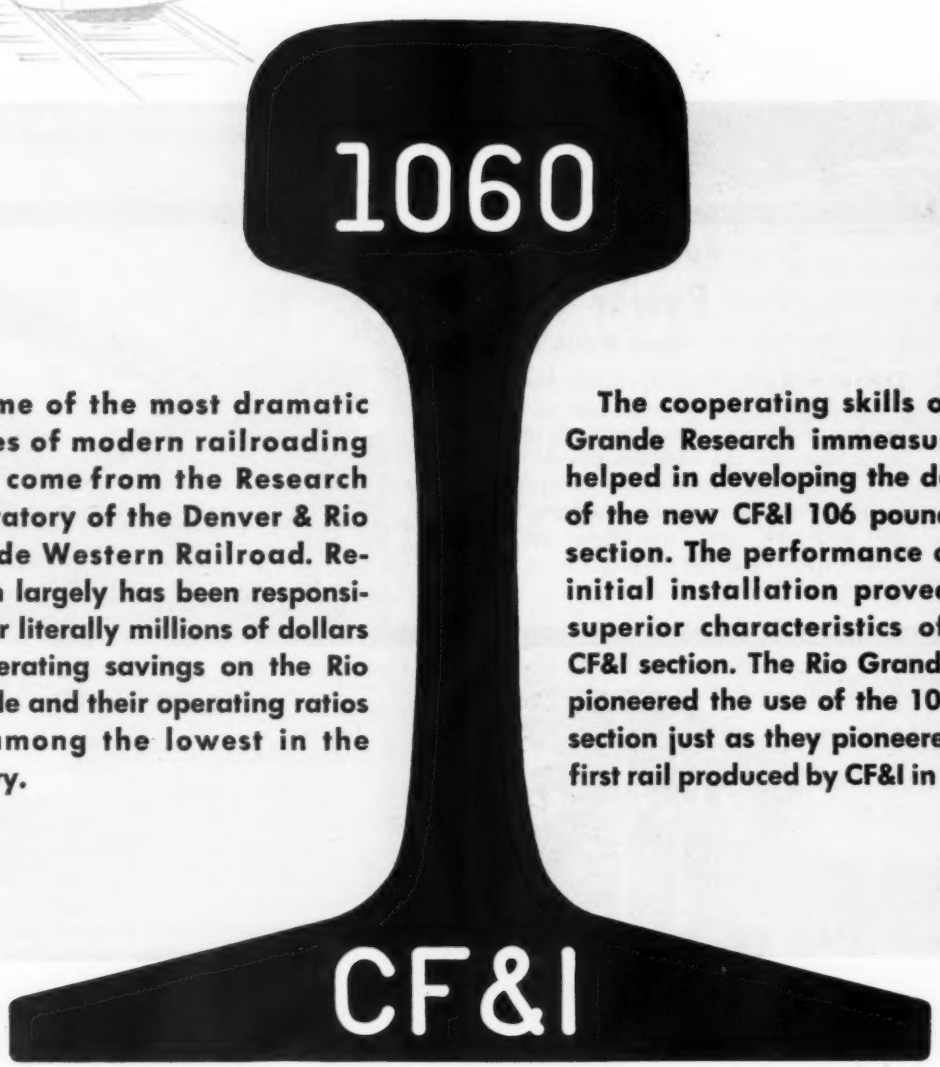
BIRMINGHAM, PITTSBURGH, NEW YORK, SAN FRANCISCO, WASHINGTON

How another Rail



Some of the most dramatic stories of modern railroading have come from the Research Laboratory of the Denver & Rio Grande Western Railroad. Research largely has been responsible for literally millions of dollars in operating savings on the Rio Grande and their operating ratios are among the lowest in the country.

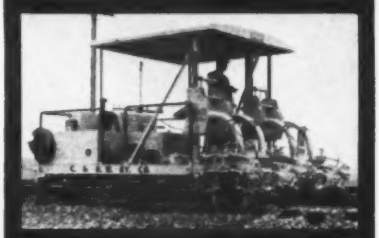
The cooperating skills of Rio Grande Research immeasurably helped in developing the design of the new CF&I 106 pound rail section. The performance of the initial installation proved the superior characteristics of this CF&I section. The Rio Grande has pioneered the use of the 106 rail section just as they pioneered the first rail produced by CF&I in 1882.

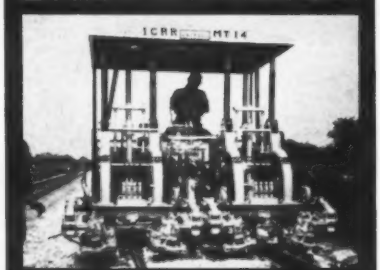
section was born...

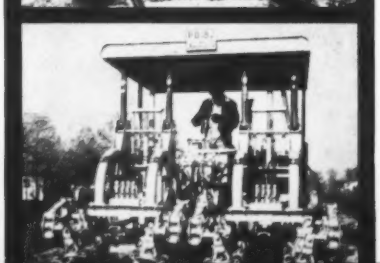
THE COLORADO FUEL AND IRON CORPORATION
Denver, Colorado

CF&I

4034







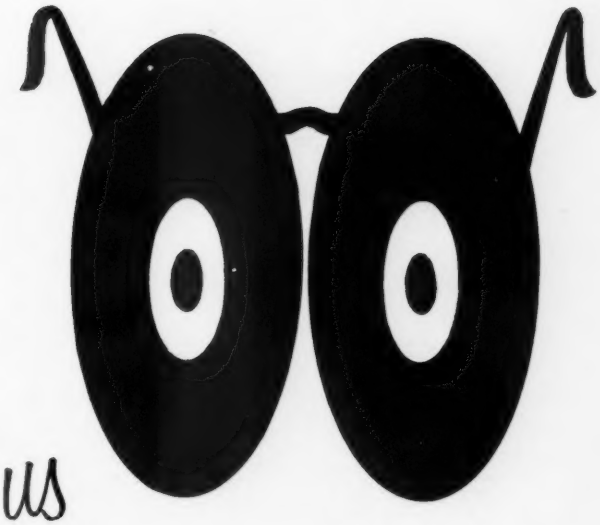
The JACKSON TRACK MAINTAINER

PUTS UP PERFECT TRACK IN A WIDER RANGE OF BALLAST AND CONDITIONS THAN ANY OTHER TAMPING EQUIPMENT!

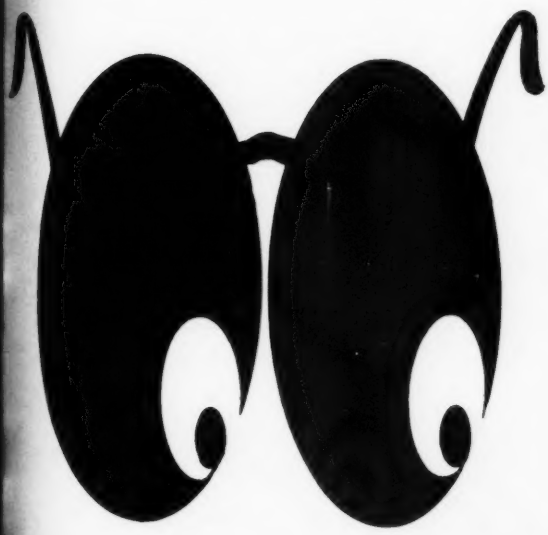
Unmistakable proof of this fact is found in the almost universal acceptance of this machine by America's leading railroads. To make sure your track maintenance dollars do maximum duty, get the complete facts concerning the Jackson before making any commitments. The evidence of its superiority is so outstanding we are confident you'll specify no other.

Acquirement plans to meet your needs

JACKSON VIBRATORS, INC.
LUDINGTON, MICHIGAN



It's on its way!



Let us tell you about it at the convention!

the **NEW** and **VASTLY IMPROVED VERSION** of the

JACKSON MULTIPLE TAMPER

THE GREATEST BUY IN ON-TRACK TAMPERS FOR A FAST, UNIFORM JOB OF PUTTING UP TRACK IN ALL MODERATE TO HIGH LIFT OPERATIONS IN ANY BALLAST.

JACKSON VIBRATORS, INC. LUDINGTON, MICHIGAN

William James Reade

The man who first introduced weed killing chemical to railroads. He organized Reade Manufacturing Company in St. Louis, Missouri, in 1883.

When costs per mile are studied and compared Reade usually shows up low

After all, this matter of low cost per mile is the thing that counts.

Even low cost per gallon means but little if the cost per mile runs higher than in the use of a low price per gallon product.

The easy thing to do in contract spraying is to douse it on.

The more difficult procedure is to spare no effort to save the railroad money.

Here is where there is need for conscientious effort on the part of the contractor. Actually there is a nice dividing line in knowing how much chemical is needed to contribute the desired results, but also in knowing where the spreading of additional quantities of chemical brings little or no benefit to the railroad.

If spray operators are to work conscientiously, guidance must be provided by the management, chemists and agronomists that make it their life's work to find answers to the many problems involved in weed and brush control.

This is where long years of experience and organization count.

In the Reade Organization there are men with service in this business from 25 to 49 years. Such knowledge is not accumulated in a few short years by a company new in the field.

In adhering to the principle of seeking to give the best results at the lowest cost per mile, we may have shortened our profit over these many years since we were organized. But our success in holding a long list of railroads year after year suggests that conscientious effort pays off.

Comparative costs in the use of different chemicals are always interesting. If you would like to study any such figures, we have them on file.

It's a good time to consider a 1957 program for weed and brush control.

READE EST. 1885

READE MANUFACTURING COMPANY, INC.

JERSEY CITY 2, N. J.

Works: JERSEY CITY • CHICAGO • KANSAS CITY • MINNEAPOLIS • BIRMINGHAM • STOCKTON

Look to the Allis-Chalmers Line... to

MATCH THE NEEDS OF YOUR TRACTOR SHOVEL JOBS

For big capacity, mobility and wide-range versatility — at low cost — choose your tractor shovel from the Allis-Chalmers line. Advanced-design features make Allis-Chalmers tractor shovels the most productive and widely accepted in the earth-moving field. Each offers a shovel that's a built-in part of the tractor, not just an attachment. Four sizes let you match the needs of your jobs efficiently.

You can increase Allis-Chalmers tractor shovel usefulness even more with a variety of quick-change attachments, such as a light materials bucket, rock bucket, rock fork or lift tong . . . or by adding a rear-mounted ripper.

- Superior balance and low center of gravity
- Sure-footed stability with extra long track
- Greater strength with heavy, welded-steel shovel side frames and low stabilizer
- Simplified hydraulics with 3-way, full-flow filtering
- Powerful, long-life Allis-Chalmers diesel engine
- All-steel main frame and one-piece final drive and steering clutch housing
- Heavy-duty roller bearing truck wheels
- 1,000-hour lube intervals on truck wheels, idlers and support rollers

1½ YD

HD-6G
10-ft dump height
72 net engine hp
19,600 lb

2¼ YD

HD-11G
11-ft, 7-in. dump height
111 net engine hp
32,000 lb

3 YD

HD-16G
torque converter drive
12-ft, 3-in. dump height
150 net engine hp
47,800 lb

4 YD

HD-21G
torque converter drive
13-ft, 4-in. dump height
204 net engine hp
66,500 lb

Ask your Allis-Chalmers Construction Machinery dealer for the complete story and for a look at one of these great tractor shovels at work. And remember, your dealer is headquarters for factory-trained servicemen, factory-approved facilities and complete stocks of True Original Parts.

TRANSPORTATION DEPT., TRACTOR GROUP, MILWAUKEE 1, WISCONSIN

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SPENO

BALLAST CLEANING and RAIL GRINDING SERVICE

The exclusive SPENO Method of Ballast Cleaning and the SPENO Rail Grinding Train have proved themselves to be time, cost, and maintenance savers for our contractual clients.

You may contract for one or both of these services—secure that you have joined company with many other outstanding and forward looking railroads.

Write today for future availabilities of equipment.

GEARED TO PROGRESS · RPI · MEMBER

Just Ask the Railroads That have used us!

FRANK SPENO RAILROAD BALLAST CLEANING CO., INC.
306 North Cayuga St., Ithaca, N. Y.

AGRONYL R WEED CONTROL

Monon Program Effects Control with 46% Budget Reduction

The Hoosier Line cut their cost from $55.10 to $29.85 per mile with self-application of AGRONYL R

The Monon Engineering Department developed a self-application weed control program for 1956 to achieve effective control and yet lower their budget requirements. With 100% Agronyl R application on more than 610 miles of Mid-American Indiana rights-of-way—mainline, passing tracks and branch lines—effective control was secured with a budget of $18,-207.80 as compared to $33,609.75 in 1955. Cost including *two* applications of Agronyl R on 249 miles of track gave complete weed control on 400 miles of Main Line, 125 miles of Branch Line and 85 miles of Passing Track. Only additional expense was $3,500 to convert weed burner to spray car. Whatever your local weed control problems, comparable cost reductions are possible with self-application of Agronyl R for Weed Control.

MONON 1955 PROGRAM AND 1956 PROGRAM WEED CONTROL COST COMPARISON

	1955	1956
Main Line and Passing Tracks — 485 miles		
Total Cost	$29,710.00a	$14,560.00c
Cost/mile for control	61.26	30.02
Branch Lines — 125 miles		
Total Cost	3,900.00b	3,647.00
Cost/mile for control	31.20	29.18
Total Cost	$33,610.00	$18,207.00
Average cost/mile for control	**55.10**	**29.85**

a—Contract Chemical Treatment b—Weed Burning c—Agronyl R

For complete information on an Agronyl R Weed Control Program including equipment, usage and application data, contact Socony Mobil Oil Company, Inc., Railroad Division, 150 East 42nd Street, New York 17, N. Y. or 59 East Van Buren Street, Chicago 5, Illinois.

SOCONY MOBIL OIL CO., INC. and Affiliates:
MAGNOLIA PETROLEUM CO., GENERAL PETROLEUM CORP.

Mobil

RAILROAD PRODUCTS

You're on the track, or off, in a jiffy!

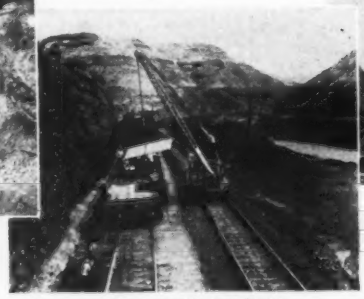
. . . with the HYSTAWAY® EXCAVATOR CRANE

Whether you are laying rail, doing right-of-way maintenance, bridge work—or any other job—you can get the Hystaway off the tracks in a few seconds, and then get it on again just as fast. Mounted on a new or used Caterpillar* Diesel Tractor, the Hystaway travels at tractor speed **on or off** rails. One railroad reports being able to do four days work in one day compared to other methods.

Hystaway gets to the job under its own power, on or off rails. You get operational flexibility not possible with other types of equipment. On this page are shown five of the many ways railroads are using Hystaway today.

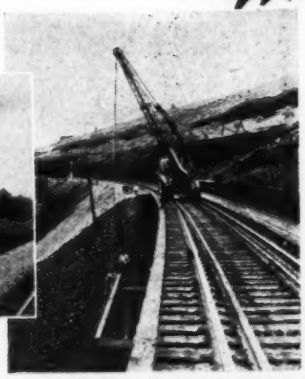
1 Laying Rail
Erie Railroad

2 Drainage Work
Spokane, Portland & Seattle



3 Handling Construction Material
Spokane, Portland & Seattle

4 Baltimore & Ohio
Right-of-Way Maintenance



5 Spokane, Portland & Seattle
Bridgework

For full details, call your Caterpillar Tractor Co. Dealer
He is also your Hyster Dealer

HYSTER COMPANY

*Caterpillar is a registered trademark of the Caterpillar Tractor Co.

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1802-56 N. Adams Street, Peoria 1, Illinois,
Portland, Oregon; Peoria, Illinois; Nijmegen, The Netherlands

1931 26 CONSECUTIVE YEARS 1957
MODERN BALLAST CONDITIONING

BEFORE *"R.B.C.C." Service*

AFTER *"R.B.C.C." Service*

"R. B. C. C." ballast cleaning service has earned its outstanding performance record from 26 years of successful operation. Our 3 and 5 unit trains are entirely self contained on our own standard railroad equipment—No railroad cars are used or tied up.

"R.B.C.C." 5 unit equipment does a thorough ballast conditioning job, cleaning two center ditches or two shoulders or one of each at one trip.

"R.B.C.C." 3 unit equipment, self propelled, does a thorough ballast conditioning job, cleaning one shoulder at one pass on one side only.

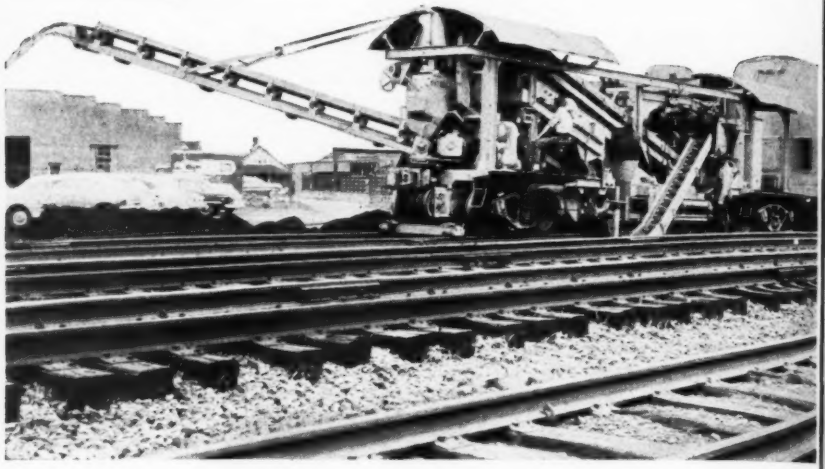
"R.B.C.C." ballast cleaning or excavating service, complete with our own personnel and equipment, is handled on contract basis.

RAND TOWER
MINNEAPOLIS, MINN.

METROPOLITAN BANK BLDG.
WASHINGTON, D. C.

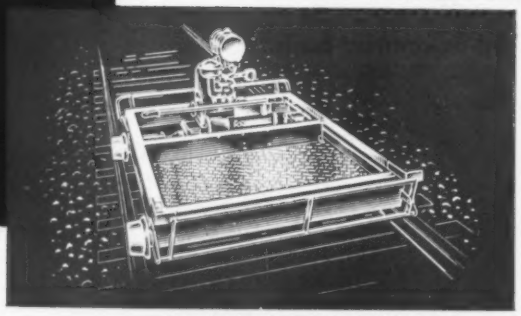
Matisa

BALLAST CLEANER CLEANS ALL BALLAST IN ONE OPERATION

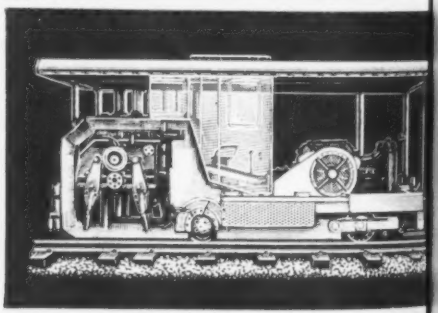


- Cleans Cribs, Shoulders, Intertrack Space and *Under the Ties*
- Provides Roadbed Resilience
- Increases Life of Good Drainage
- *SAVES* Ballast Money
- LOWERS TRACKS:
  - In Tunnels
  - Under Overhead Bridges
  - Between Grade Crossings
  - From Bridge to Bridge

OTHER MATISA TRACK MAINTENANCE MACHINES

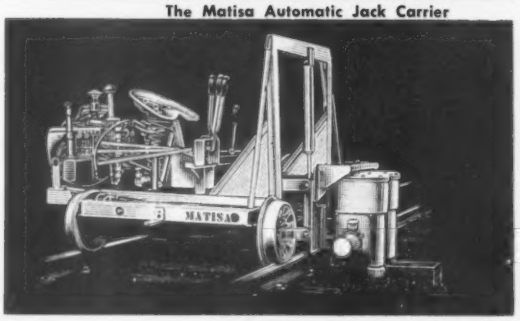


The Matisa Automatic Jack Carrier

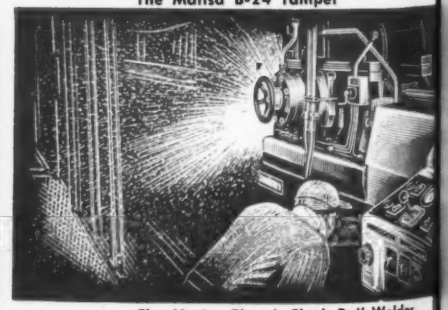


The Matisa B-24 Tamper

For detailed information on the Matisa Ballast Cleaner see page 175 of the 8th edition of the Railway Track & Structure Cyclopedia—or send for literature on this or other Matisa machines.



The Matisa Tie Renewal Machine

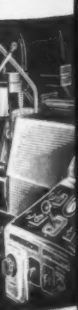


The Matisa Electric Flash Rail Welder

Matisa

EQUIPMENT CORPORATION

1020 WASHINGTON AVE. • CHICAGO HEIGHTS, ILLINOIS



il Welder

News Notes

. . . a resumé of current events throughout the railroad world

RAILWAY
TRACK and STRUCTURES
MARCH, 1957

The Delaware & Hudson has authorized the expenditure of a half million dollars for new roadway machinery and tools in 1957, according to an announcement by J. P. Hiltz, Jr., vice-president in charge of operation and maintenance. The purchases will include 15 highway trailers for living quarters for maintenance of way personnel to replace rail camp cars. Other items include additional mechanized track maintenance equipment, 46 motor trucks and 12 Hy-Rail cars.

•

Hazards of air travel in 1956 appear to have been about three times as great as those of travel by rail. The Civil Aeronautics Administration has estimated that last year's fatality rate of regular scheduled domestic air lines was 0.62 passenger deaths per 100 million passenger-miles. The railroad rate for the year's first 10 months was about 0.21, and accidents of the last two months are not expected to change it much.

•

Lower fares on the Pennsylvania's "Aerotrain" are being tested between Pittsburgh and Harrisburg and intermediate points. Limited to round-trips only, and with a five-day limit, the test fare figures out at 1.86 cents per mile. It marks the first fare cut of its kind in conjunction with the much-publicized lightweight, low-cost trains now running on five railroads.

•

The railroad industry's first supplemental unemployment benefit plan for employees displaced by technology or organization streamlining has been agreed upon by the Chicago & North Western and 12 non-operating unions. The agreement provides for payments by the railroad to supplement the benefits provided under the Unemployment Insurance Act. Total benefits can run as high as $51 a week.

•

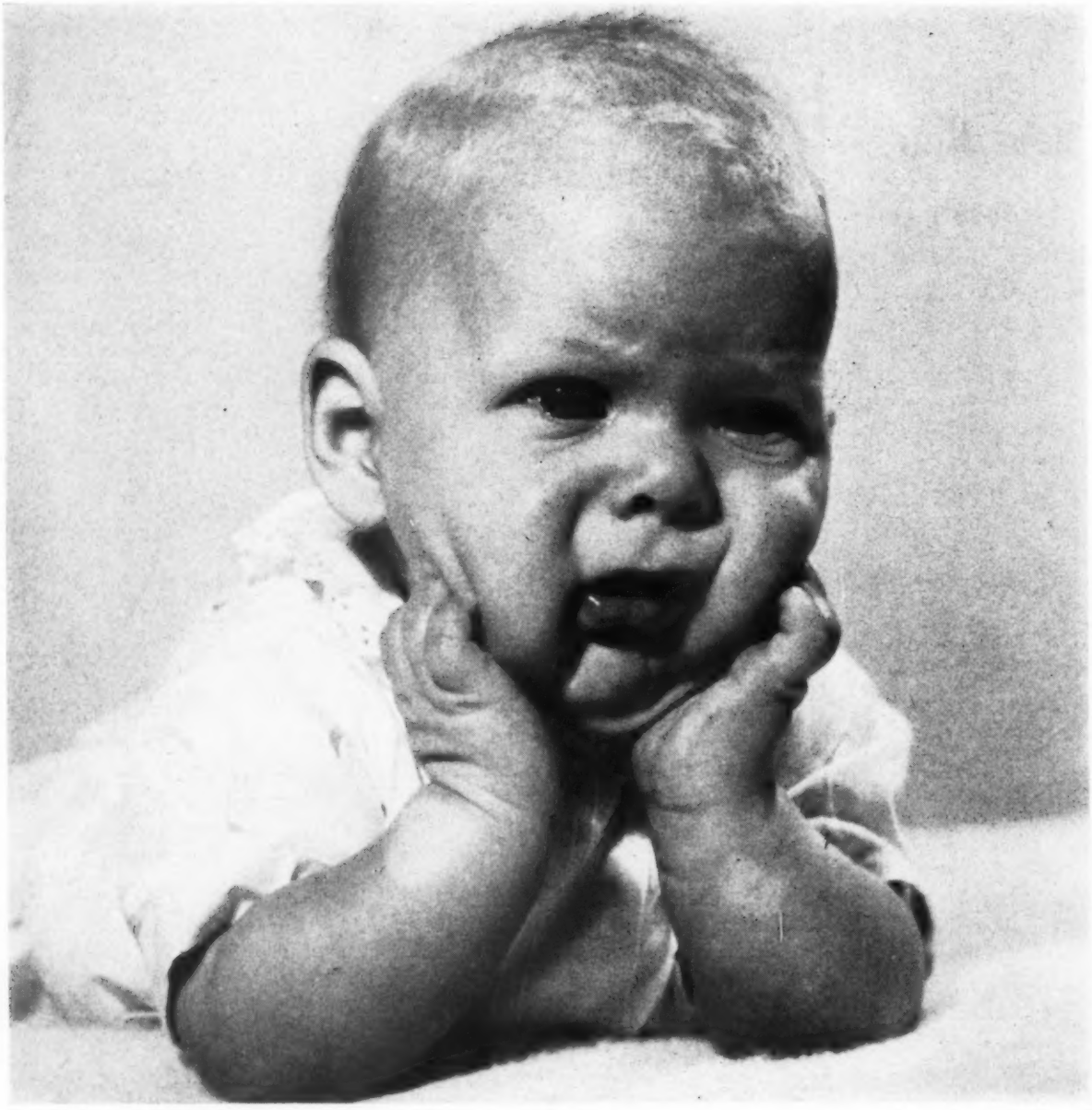
The Interstate Commerce Commission has authorized Southern railroads to increase their freight rates by 5 per cent on 15 days' notice. The grant was made in response to a petition for an emergency raise of 7 per cent filed last November in connection with wage increases. Most of the Southern lines have now told the ICC that they need an overall freight rate increase of 15 per cent, estimated to yield about $170 million a year, which they consider necessary to defray increased costs.

•

Engineering programs now underway by Sperry Rail Service have the final aim of providing within a single car the benefits of both induction and ultrasonic rail testing. A completely redesigned detector car is reported to be a definite possibility for the near future.

•

Sperry Rail Service, which was in the business of butt-welding rails in the late 'Thirties is expected to be back in this field within 18 months, assuming extensive engineering work now underway proves successful.

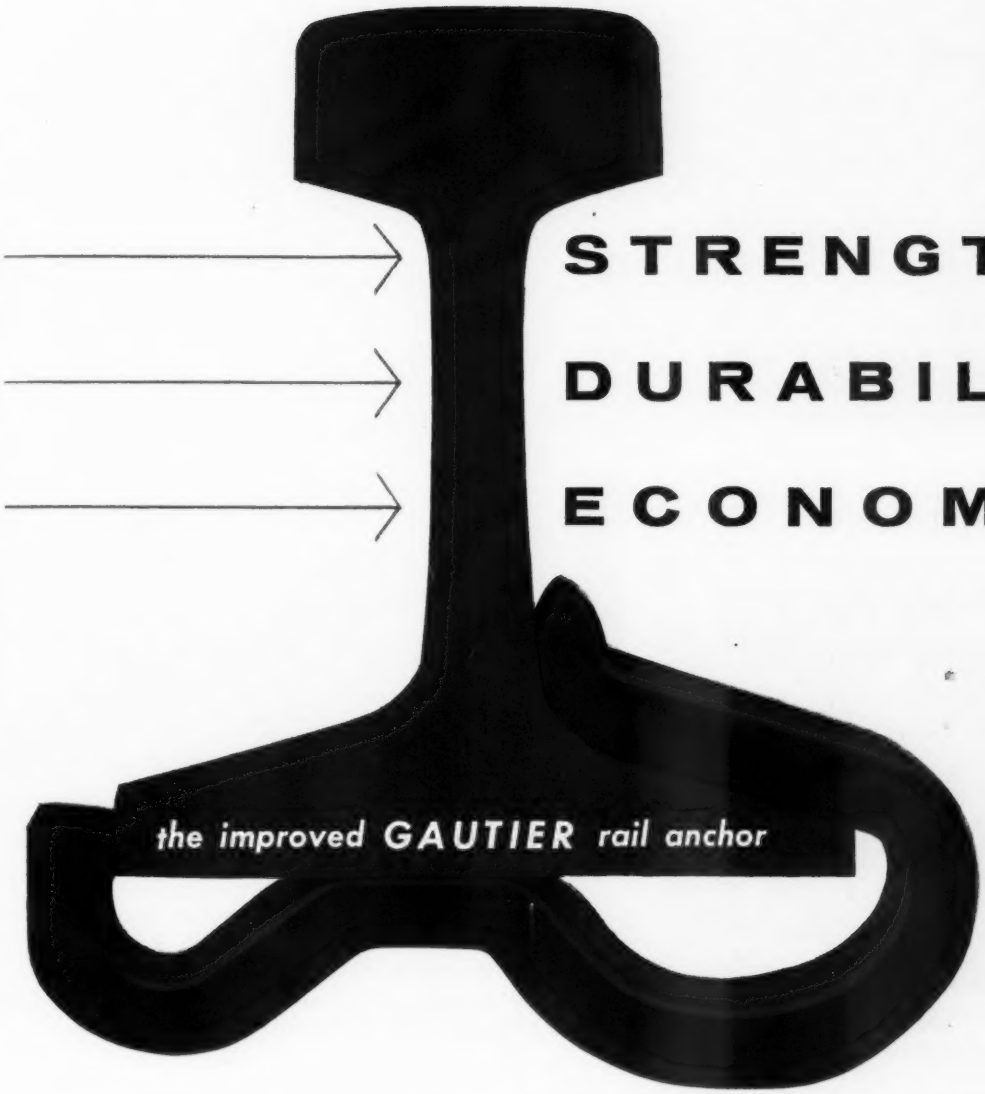


"Weeds, weeds, weeds . . . they're worse than my ulcers . . . can Bogle help me?"

Can't guarantee to cure those uclers, old man. But don't worry about the weeds. Just call us. We'll map out a complete weed and brush control program specifically designed for your own road's requirements. One that will fit your budget, too.

Continuous "on-track" research has shown us what chemicals are best for your particular needs. And we've got the men and machines to do the job. You'll be pleased at the long-lasting, low-cost results.

The R. H. Bogle Company
ALEXANDRIA, VIRGINIA
Memphis, Tennessee



Next time you order—specify and insist on The Improved GAUTIER Rail Anchor

STRENGTH—The Improved Gautier is a heavy one piece rail anchor made of tough Alloy Spring Steel.

DURABILITY—The Improved Gautier is a rugged, sure-gripping anchor that has sufficient take-up so that it can be used again and again on new or used rail.

ECONOMY—The Improved Gautier can be applied with a maul or spike maul and can't be overdriven. It distributes the weight load evenly relieving stresses and strains, reducing maintenance of way and operating costs.

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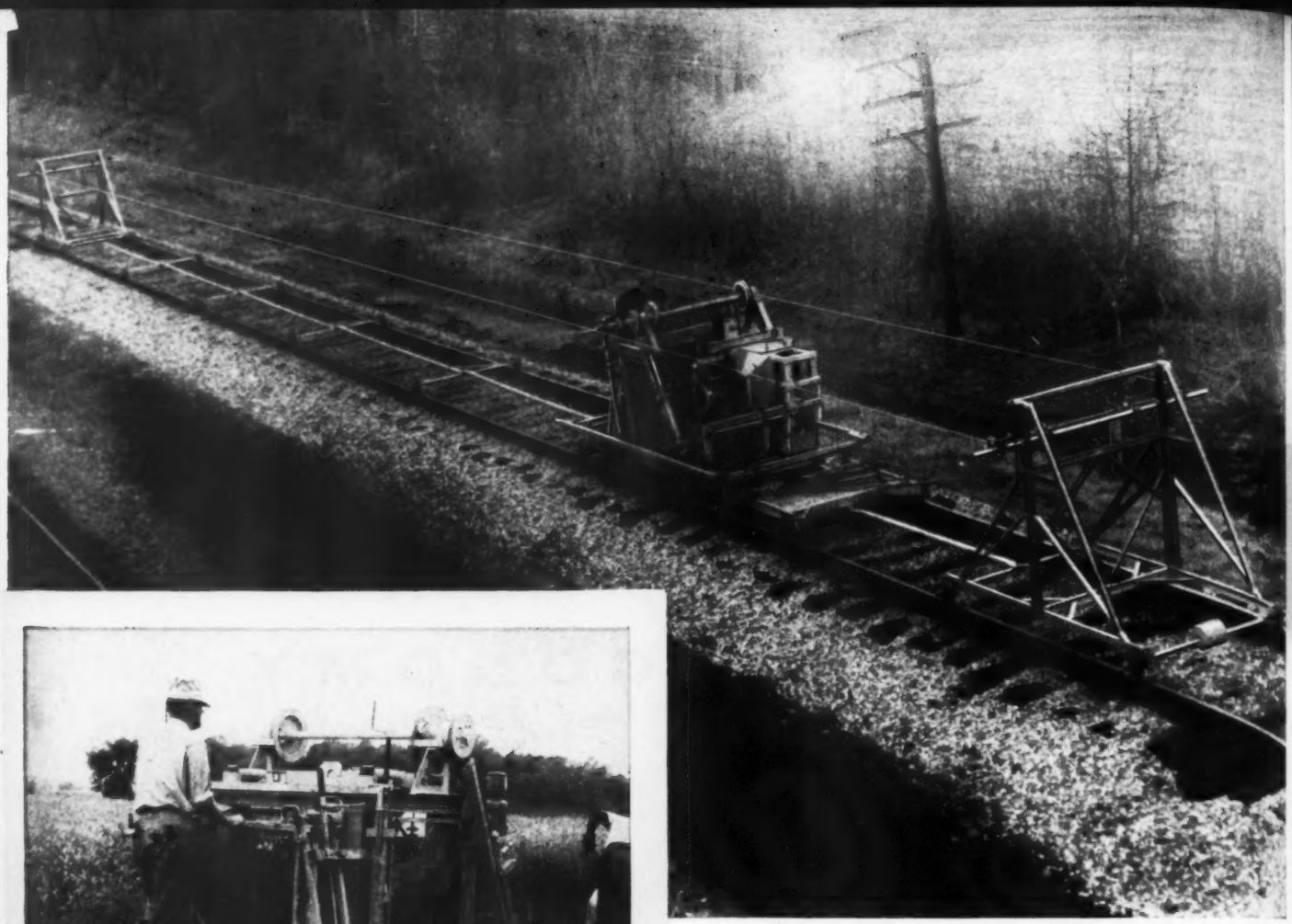
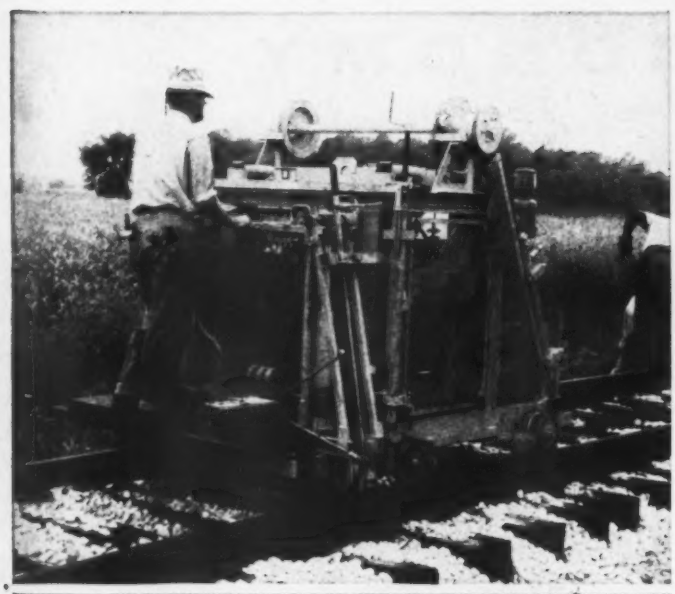
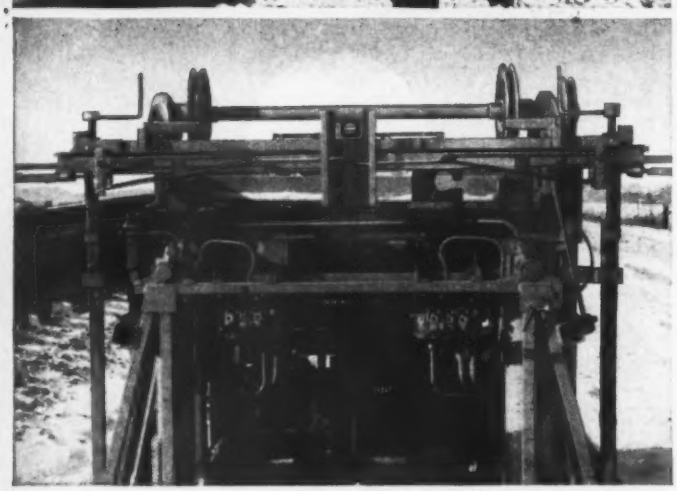
General Offices, 38 S. Dearborn St., Chicago 3, Ill. ● Manufacturing Plant, Chicago Heights, Ill.

Distributors: D. V. MAHER, Cleveland, Ohio; MILTON W. ALLEN, Denver, Colorado; JOHN O'BRIEN, St. Paul, Minnesota
W. T. RICHARDS, ROBERT A. BAER, San Francisco, California; H. B. HARRISON, Chicago, Illinois







(Above): **Here is the new Nordberg *Trak-Surfacer —Tamping Power Jack team*. The two carriages and the two-wheeled buggies support the Wire that passes on both sides of the Tamping Power Jack, and hold the Wire in tension.**

(Top, left): **Nordberg Tamping Power Jack does the raising and propels itself and the *Trak-Surfacer*.**

(Left): **Pointer and level bubble mounted on Tamping Power Jack *(see circled area)* . . . the aluminum pointers in contact with the Wire show operator when correct raise is reached, and level bubble indicates correct cross level.**

Other cost-cutting Nordberg ***"Mechanical Muscles®"***

BALLAST ROUTER • BANTAM RAIL SLOTTER • CRIBEX® • BALLASTEX® • SCREENEX® • SPIKE HAMMER • TIE DRILL
HYDRAULIC and MECHANICAL SPIKE PULLERS • POWER JACK • POWER WRENCH • RAIL DRILL • RAIL GRINDERS
SURF-RAIL® GRINDER • TIE-KAT® • TRAKLINER® • TRACKSHIFTER • DUN-RITE® GAGING MACHINE and BRONCO

Presenting the new NORDBERG

TRAK-SURFACER

...an entirely new method of raising track

• The Nordberg *Trak-Surfacer* completely eliminates the use of a "Spot-Board" when raising track and, generally also eliminates the necessity for running profiles and setting grade stakes.

The basic principle of the *Trak-Surfacer* is to form a reference line with the top of the Grade Rail through the use of a 125-ft. steel wire. The wire is tightly drawn between two 4-wheel carriages, held apart by a series of 2-wheel buggies.

The Nordberg Tamping Power Jack is used as the central unit in the *Trak-Surfacer —Power Jack team*. It raises the track, tamps the tie to hold the raise and provides propulsion power for itself and the entire *Trak-Surfacer*. The Tamping Power Jack is located so that a cross level mounted on the Jack is 25 feet from the rear support carriage. A pointer, mounted on the cross level directly in front of the Jack operator, shows him when the track is raised correctly.

In operation, the wire adjustment on the front carriage is set for the desired lift. Since the rear buggy is always on raised track, its wire adjustment is held at "zero". The Jack operator raises the Grade Rail until the pointer is at zero indication, and then brings the opposite rail to correct cross level. The tie is then tamped to support the track in this raised position. He then moves to the next jacking location and repeats this operation.

Removal of the *Trak-Surfacer* from track is fast and easy. All sections of the *Trak-Surfacer*, including front and rear buggies, are of aluminum . . . so light that one man can handle any section.

For full details about this newest Nordberg "Mechanical Muscle"®, send for a copy of the new TRAK-SURFACER BULLETIN.

NORDBERG MFG. CO., Milwaukee 1, Wisconsin

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R257

Serving
the Nation's Railroads
for over 25 years

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MAKE KOPPERS YOUR HEADQUARTERS FOR INFORMATION ON CORROSION PREVENTION

The Corrosion Report at the right is the first in a continuing series. Through these Reports, we hope to give you useful, practical information which will be of value in your corrosion-prevention work.

These Reports reflect the many years of experience by Koppers Tar Products Division in the manufacture and successful application of protective coating materials. Though not the answer to all corrosion problems, protective coatings are a useful ally in industry's fight against corrosion.

If you have a problem on any phase of corrosion prevention, it is likely that we have literature which will help you. Use the coupon below for your request.

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Company _____

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how to
CUT CORROSION LOSSES
a report by Koppers Company, Inc.

W. E. Kemp,
Manager of the Technical Dept.

Although corrosion losses are never listed on a profit and loss statement, they represent a considerable—and often unnecessary—loss to every industry. Preventing this loss is a big part of our business as the world's leading producer of coal tar base enamels and coatings.

* * *

Many times every week we get a phone call, wire or letter asking the same, often harried, question: "Can you help me with this corrosion problem . . . ?" In most cases, we *can* help, and are most happy to do so. In fact, our Coal Tar Technical Department is designed to facilitate such help.

Basically, we have two groups within the Technical Department—the Development Group and the Technical Service Group. They are both headquartered at Verona, Pa., in a new building with the latest facilities for laboratory work and pilot plant operations. This building also houses the Quality Control staff of the Tar Products Division. These ten chemists cross-check the quality control operations of each plant.

Our Development Group consists of a General Supervisor, Mr. Frank Charlton, and two project leaders who supervise the activities of nine chemists and engineers. They work constantly to up-grade the effectiveness of Bitumastic coatings and to develop new coal tar coatings.

Our Technical Service Group, supervised by Mr. C. U. Pittman, also includes two project leaders and four laboratory workers. These men work in close liaison with our customers, distributors and sales engineers to help them specify the best coating and the most economical application for the job.

We also retain the services of two widely-known coating and corrosion scientists: Dr. W. F. Fair, Jr. and Mr. R. C. Stromquist. Both of these men—and each member of the Technical Department supervisory staff—have had more than 20 years' experience in the bituminous coating field. Dr. Fair and Mr. Stromquist work with all departments and, through first-hand field experience in their extensive travel, alert us to customer needs for new or modified protective coatings.

* * *

Naturally, many of our technical personnel participate quite actively in industrial and technical organizations. One of our coatings consultants, Dr. W. F. Fair, Jr., actually served full time last year as president of the National Association of Corrosion Engineers. Altogether, 70% of our men are members of scientific and technical societies. They participate actively on committees working on industry-wide problems.

In future columns, we plan to report to you on specific corrosion problems in such industries as steel, gas, petroleum, water supply and sewage and industrial wastes. In the meantime, we'd like to hear about your problems. Write to Koppers Company, Inc., 1301 Koppers Building, Dept. 116C, Pittsburgh, Pa. In Canada, Koppers Products, Ltd., Toronto and Edmonton.

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Send for catalog on the F-M Motor Cars that fit your maintenance and inspection needs. Each catalog contains the complete information you need when considering rail car purchases for this year.

design advantages

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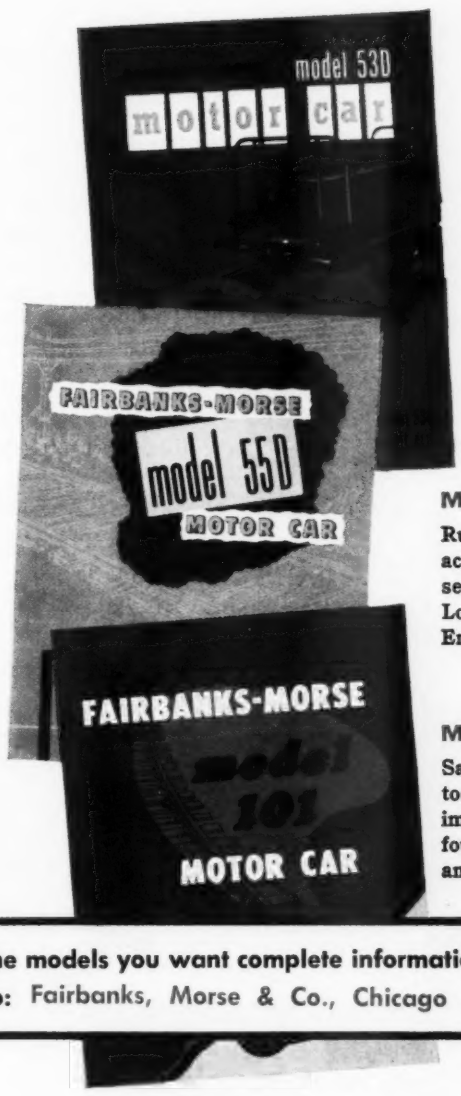

MODEL 53D ☐
Double-duty performer that is full-sized standard section car and yet light enough for minimum crew to handle easily, safely.

MODEL 55 ☐
Rugged and powerful car that accommodates up to a six-man section crew and equipment. Low center of gravity. Enclosed seat sides.

MODEL 101 ☐
Safest inspection car on the rails today. Four forward speeds, immediate reverse, four-wheel brakes, wheel silencers and low lifting weight.

Check the models you want complete information on, and write to: Fairbanks, Morse & Co., Chicago 5, Illinois.

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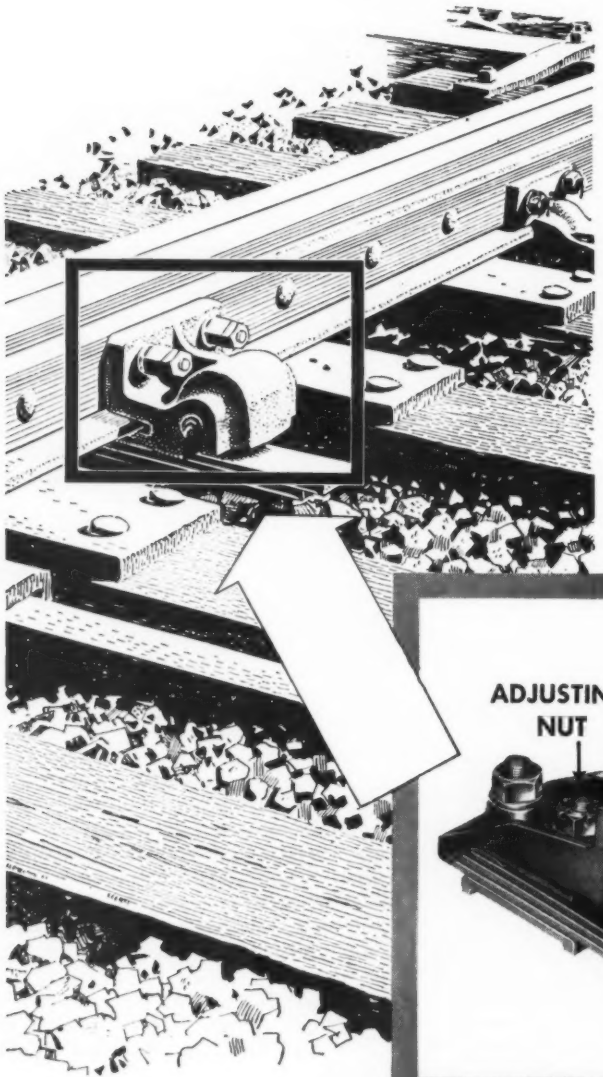
a name worth remembering when you want the BEST

RAIL CARS & RAILROAD EQUIPMENT • DIESEL LOCOMOTIVES & ENGINES • ELECTRICAL MACHINERY • PUMPS • SCALES • WATER SERVICE EQUIPMENT • MAGNETOS

UNION Roller Bearings give—

Increased reliability of switch operation under adverse conditions

Easier operation under all conditions

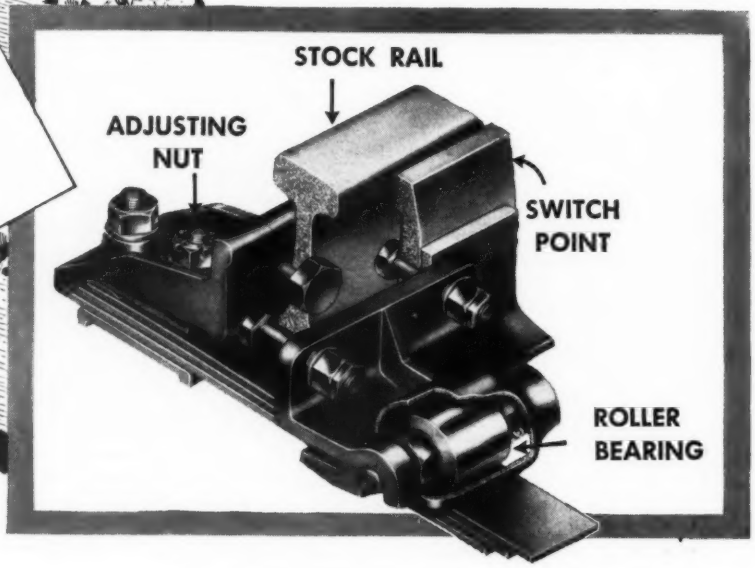


The purpose of applying roller bearings to switches is to reduce friction during operation. With heavier rail and longer turnouts, this has become an important factor.

UNION Style R Roller Bearings . . .

- Reduce force required to move switch points and cut down on power consumption for power-operated switches.
- Reduce wear on connections and operating mechanism.
- Improve spring switch and mechanical facing point lock performance.
- Cut down maintenance costs . . . less cleaning and oiling required.
- Save money by preventing train delays.

UNION Roller Bearings are easy to install and adjust . . . do not interfere with tie tamping. Ask any UNION district office for complete information.



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DIVISION OF WESTINGHOUSE AIR BRAKE COMPANY
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RACINE

Hydra-Quad TAMPER

(Patent Pending)

Just one man operates this four-tool ballast tamper

Here's a completely hydraulic machine that tamps more track per man per day . . . and does it more uniformly. One operator controls the vertical movement and lateral position of four tampers through two finger-tip hydraulic valves. *Each tamping gun acts independently to insure full compactness of ballast at all points.* All four tamping guns automatically tilt to carry ballast under the tie at proper depth. To accommodate crooked ties, the operator simply swivels the main head.

The Hydra-Quad tamper is easy to adjust for varying rail heights and wider-than-average ties. Each gun is equipped with a quick-change tamping bar holder.

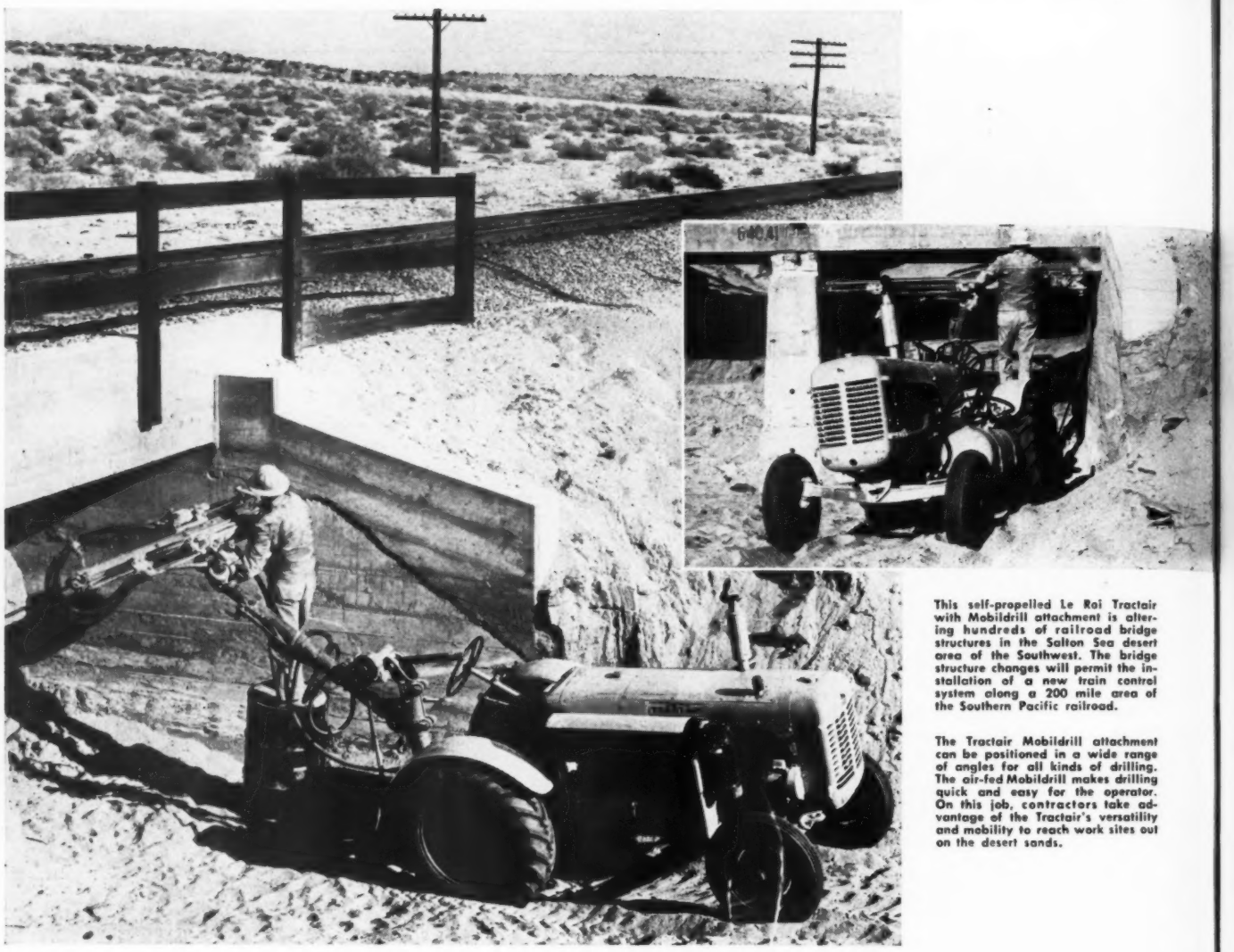
Drop-down and outboard wheels insure easy removal from track. Hydraulic cylinder raises and pivots the machine. Power winch assists in rerailing. Movement from tie to tie is powered by a fluid motor that also operates the power winch.

One more flexibility feature: Off-center outrigger mounting permits two men to operate machines on opposite rails to tamp both tie ends simultaneously. Send for free folder and specifications. Address **RACINE HYDRAULICS & MACHINERY, INC.,** 2038 Albert St., Racine, Wisconsin.

Lease or time purchase plans are available.

RACINE

HYDRAULICS & MACHINERY, INC., RACINE, WISCONSIN



This self-propelled Le Roi Tractair with Mobildrill attachment is altering hundreds of railroad bridge structures in the Salton Sea desert area of the Southwest. The bridge structure changes will permit the installation of a new train control system along a 200 mile area of the Southern Pacific railroad.

The Tractair Mobildrill attachment can be positioned in a wide range of angles for all kinds of drilling. The air-fed Mobildrill makes drilling quick and easy for the operator. On this job, contractors take advantage of the Tractair's versatility and mobility to reach work sites out on the desert sands.

How Railroad Uses Tractor-Compressor to Lick 200-mile Job in Desert Sands

Drilling rig mounted on combination unit, speeds from one working location to another.

Le Roi Tractair mobility not hindered by the dry, loose sand.

On the job, Mobildrill swings easy, gets into tight corners, saving hours in weekly drilling time.

Shifting sands of the desert pile up some equipment problems on the new train-control system project now under way between Colton, California and Yuma, Arizona.

The T. M. Page Corp., subcontractor on the 200-mile project says, "We found an answer in the Le Roi Tractair. It's one machine able to crawl through this very loose, dry sand under its own power. It's versatile. Most of the other machines need a crawler tractor to get them in and out of the work sites."

The Tractair with its air-fed Le Roi-Cleveland Mobildrill attachment is drilling hundreds of concrete supports for alteration of bridge structures. The Mobildrill makes drilling easy for the operator, as it can be swung to a variety of angles for all kinds of drilling.

Because Tractair is a combination 125-cfm air compressor and a 42-hp wheel tractor in one self-contained unit, it can be equipped with a wide variety of attachments. These include a front-end loader or a backhoe, plus dozens of accessories and air tools for most any need.

Three other Le Roi compressors are used on the project. "Perfect" service for all four Le Roi machines is provided by the distributor, according to the contractors. All of the Le Roi units work 8 to 9 hours each day in the hot climate.

T-52

LE ROI Division of Westinghouse Air Brake Co., Milwaukee 1, Wisconsin, manufacturers of Cleveland air tools, Tractair, portable and stationary air compressors, and heavy-duty industrial engines. Write us for information on any of these products.

In the aftermath of an Eastern hurricane, 7 Koehring self-propelled RailAids were rushed into the disaster area. Pictures show how they speeded track clean-up, salvage and repair to quickly re-establish main-line service.

Repairing HURRICANE FLOOD DAMAGE

Cargo salvage — Shipments had to be rescued in a hurry. RailAid crane removed bales of unprocessed wool from wrecked box cars, transferred them into gondola cars, and, later, into trailer trucks. By this quick action delivery was completed without spoilage.

Washouts and landslides knocked out 500-foot sections of track in some places. Here, a Koehring 205 working on its own rail-propulsion car fills ballast along a weakened double-track section. Another RaidAid is working off-track behind the gondola cars.

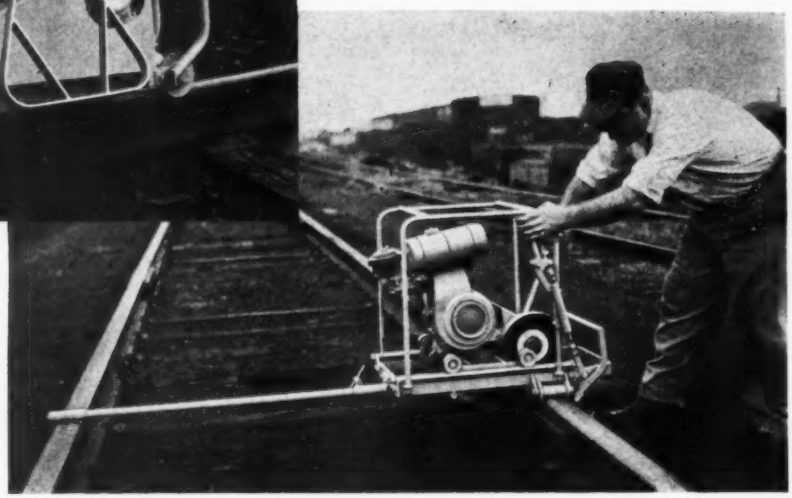
Ties, rails, drainage pipe were quickly reclaimed, and put back into use. RailAids loaded ties on ballast boxes, moved on-track, towing rails, materials and supplies, re-laid rail — worked round-the-clock to open main line for regular service in record time.

On and off-track flexibility was an important factor in the disaster clean-up. Where track was blocked, RailAids took to high ground, worked and traveled off-car. Read all about it in the latest RailAid bulletin. Write to **Koehring Co., Milwaukee 16, Wis.**

K659

KOEHRING RailAid® Subsidiaries: PARSONS • ZWICK-MIX • JOHNSON

MODEL P-45-A PORTABLE RAIL SURFACE GRINDER. Powered by 4-cycle, air-cooled gasoline engine developing 7½ hp at 2600 rpm. Adjustable V-belt drive acts as overload release.



MODEL X-60 PORTABLE CROSS GRINDER. Powered by 4-cycle, air-cooled gasoline engine developing 3.4 hp. Hand-actuated lock control lever allows easy alignment with rail joint.

Do Your One-Man Jobs Faster with Low Cost RTW Grinders

These light weight, portable grinders are ideally fitted to your one-man rail end and joint grinding jobs. They do the job faster, with less operator fatigue. Vibration is reduced to a minimum because the engines are mounted on rubber bushings. Designed for long life at low initial and operating cost, they give greater accuracy in performance with a minimum of skill and effort. Their portability makes them especially useful for maintenance work in heavy traffic areas.

Model P-45-A, a cup wheel grinder, is mainly used for grinding welded rail ends and for removing mill tolerance and mill scale before heat treating rail ends. It leaves a very smooth and highly polished surface.

Model X-60, cross grinder or slotting machine, quickly removes overflowed metal at rail joints. It is also used with out-of-face rail end welding crews and for cross grinding rail ends behind the crews.

RTW Grinders are designed and engineered by specialists in track maintenance equipment.

Railway Track-work Co.

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Write today for complete details.

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Rail Grinders • Ballast Extruders • Switch Grinders • Bit Sharpeners • Cross Grinders • Tie Nippers • Surface Grinders • Grinding Wheels • Rail Drills • Cut-off Wheels • Cross Cutters • Tie Handlers • Track Liners

This AUSTIN-WESTERN HYDRAULIC CRANE is our most useful tool

Says the foreman of the Burlington Lines repair yard at Lincoln, Nebr.

The Burlington Lines repair yard at Lincoln, Nebr., takes on some 125 to 170 freight cars a day, some of them requiring minor repairs, but many of them calling for a complete rebuilding job. It involves work on 175 axles a week as an average—quite a materials-handling problem.

Install Austin-Western Crane. "To solve the problem, our operating department installed an Austin-Western crane April 1, 1955," the foreman says. "It proved the answer to so many problems that in October of that year we ordered a second unit for this yard, which has been in operation for more than a year."

72% saving over manual job. He goes on to say: "Transporting a gondola car full of brake beams to the storage yard, 100 yards away, formerly took three men for unloading and two men for moving the beams—five men working 8 hours per car—a total of 40 man-hours.

"With the Austin-Western, the operator and his helper now do the job in 4 hours at a cost of 8 man-hours for the men and 3 man-hours for 4 hours' use of the crane, a total of 11 man-hours. A saving of 29 man-hours, in this case, means a better than 72% saving over the manual unloading operation. This Austin-Western Hydraulic Crane is our most useful tool."

Extremely versatile. "For transporting axles and wheels we use a special sling. The operator drops this over the axle and hooks it. Then at the end of the run he releases it. All without getting out of his cab. With an 8-ft. manual extension on the 18-ft. extensible boom, the operator can handle steel doors for box cars, often to the second track over, thus shortening the distance to the car under repair. . . . Unloading steel in almost any form from gondola cars is a daily chore of this crane. . . . Makes every heavy item in the repair yard more accessible and more speedily available. . . . Its greater precision in placing the load or holding a part while being welded or fastened is important, as in the case of the car doors, which are held in exact position. This is a big time-saver."

For the complete Burlington story, write for Gould Report No. 5607.

AUSTIN-WESTERN WORKS
642 Farnsworth Avenue, Aurora, Illinois
Please send complete Gould Certified Report No. 5607.

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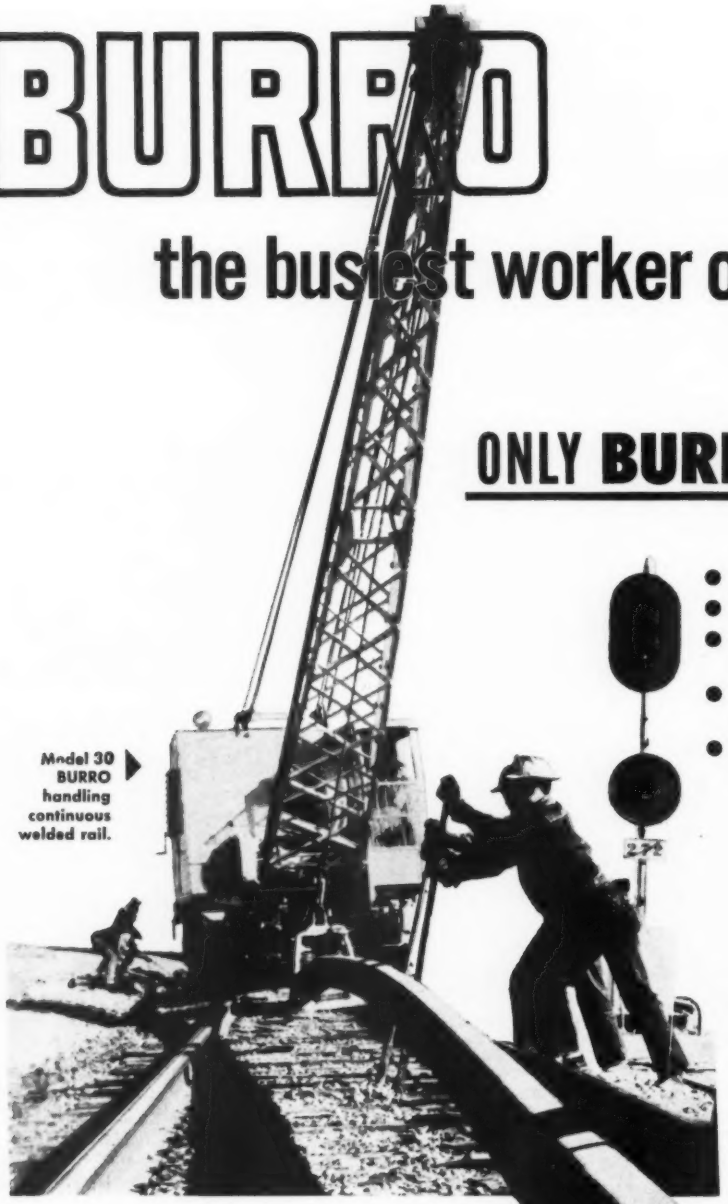
AURORA, ILLINOIS, U.S.A.

BURRO

the busiest worker on the track

ONLY **BURRO** CRANES HAVE ALL THESE ADVANTAGES:

- **Fast travel speeds . . . up to 28 MPH**
- **Draw bar pull in excess of 9000 lbs.**
- **Elevated Boom Heels for working over high sided gondolas**
- **Short tail swing—will not foul adjoining track**
- **Low overall height. BURRO can be loaded and worked on a standard flatcar.**



Model 30 BURRO handling continuous welded rail.

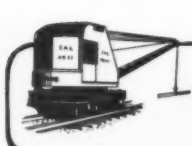
Model 30 BURRO stockpiling rail at welding site.

New track construction with a Model 30 BURRO is a fast, efficient operation.

Trackwork—a BURRO Crane specialty, is just one of countless jobs these fast, powerful workhorse units are doing on the railroad today.

Pound for pound, there's more work power and versatility built into BURRO Cranes than any other unit. A BURRO takes any job in stride. In the yard or on the line, it is unequalled for speed and economical performance.

BURRO Cranes are made in three models—Model 15A, Model 30, and the larger Model 40. BURRO Crane catalogs have the full story on these time and money-saving machines. Write for them.



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1301 SOUTH KILBOURN AVENUE • CHICAGO 23, ILLINOIS

Improved Hipowers maintain constant bolt tension, keep bolts tight, absorb shocks, protect rail ends. These super-powered railway spring washers withstand the terrific stresses and strains, and the constant pounding of main line traffic. Reduce maintenance costs by installing National Spring Washers.

A COMPLETE LINE OF RAILWAY SPRING WASHERS

The NATIONAL LOCK WASHER COMPANY

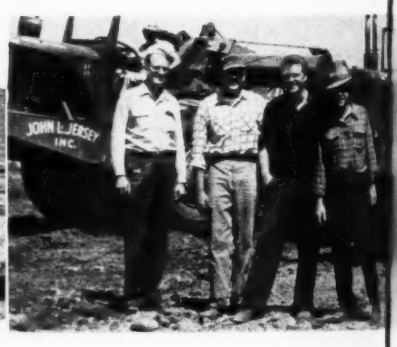
Serving Industry Since 1886 — NEWARK 5, NEW JERSEY, U.S.A.

27-second loading.

deliver EXTRA "PAY-DIRT"

Note how extra-high Payscraper apron-lift provides *obstruction-free* room for fast unloading. And straight-line, *power-saving* ejector reeving leaves more power on Payscraper wheels, to speed dumping and spreading.

Air-assisted clutch; big, safe, 4-wheel air brakes; exclusive Hydro-Steer — all contribute to give the Payscraper its outstanding operating ease and safety. The two Payscrapers and two other towed scrapers are push-loaded by the TD-24.



Left to right: John L. Jersey; J. M. Harris, Supt.; Dale Jersey, Supt.; and William Donaco, General Supt. of the job.

. . plus super-fast get-away . .

on industrial district job

for John L. Jersey, Inc., Portland, Oregon

John L. Jersey, Inc., Portland, Oregon, uses International "55" Payscraper loading and transport speed—and famous TD-24 *follow-through* push-loading—to highball the 833,000-cu-yd Rockwood Industrial District contract to timely, profitable completion.

In only 27 stop-watch-certified seconds, and only 60 to 100 feet of travel, each "55" Payscraper's bowl boils heaping full of gravelly soil—and the "55" is off to the fill at up to 20 mph!

"More dirt on the fill"—more dough in the till

Owner John L. Jersey reports: "Last year we put over 2,000 hours on both our '55' Payscrapers with cable replacements as the only necessary repairs. This year we got two more '55's' and a new TD-24 to load them fast. I believe '55's' are the most scraper for the money.

"We've found our '55's' load in 25-30 seconds. They're simple and easy to maintain and operate. Quick, full-load Payscraper get-away means more dirt on the fill, and that's what we get paid for."

Largest of its kind in the Pacific Northwest, the triple-terraced, 188-acre Rockwood project, on the Columbia river, is a Union Pacific Railroad Co. development—to attract new industry to the Portland area.

Prove bonus-powered International equipment performance for reducing grades, removing landslides, daylighting curves, handling ties, loading ballast—for all kinds of off-track duties. See your nearby International Construction Equipment Distributor for a demonstration.

INTERNATIONAL HARVESTER

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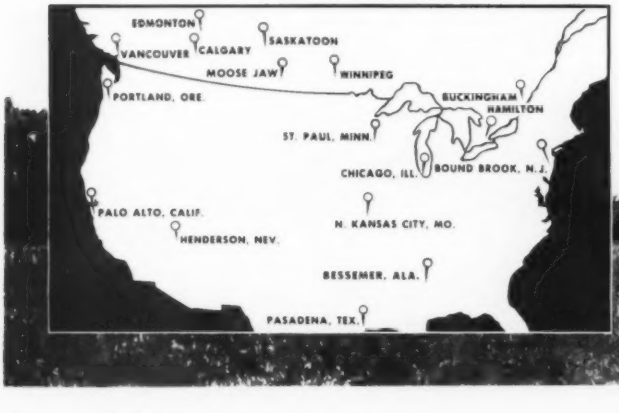
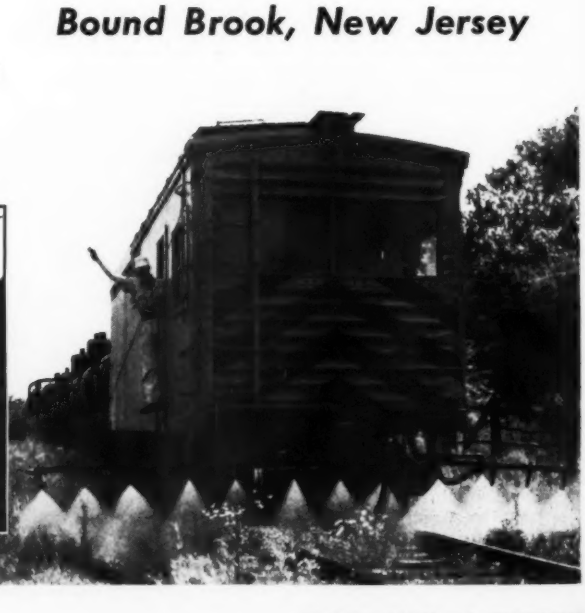
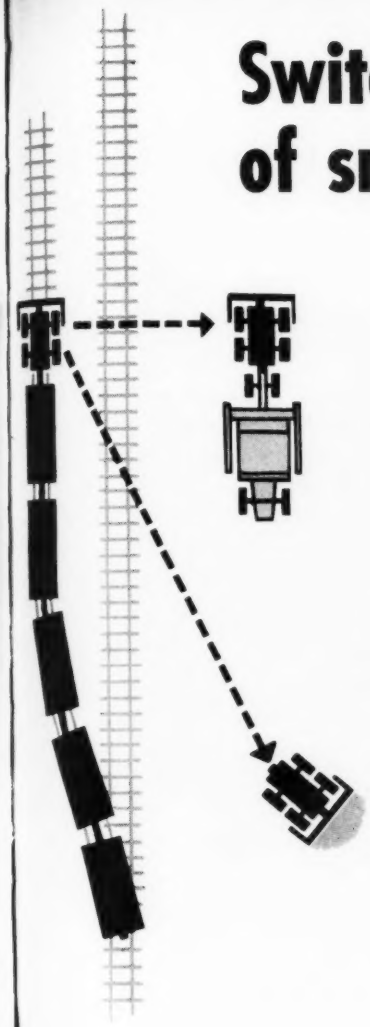
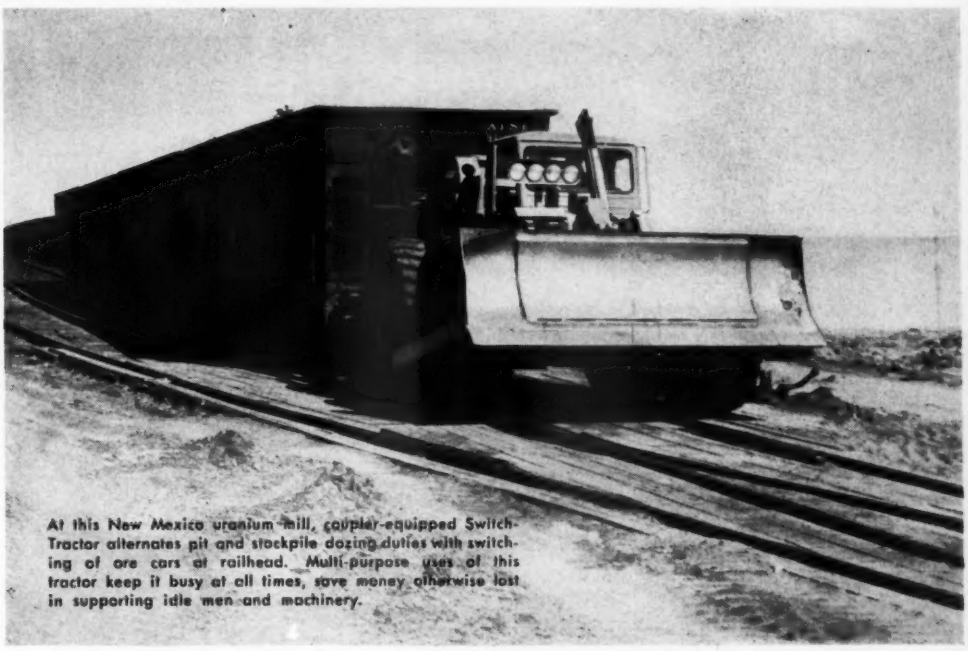




SwitchTractor solves problem of small, scattered switching jobs

Dozes, tows, operates equipment, too





At this New Mexico uranium mill, coupler-equipped SwitchTractor alternates pit and stockpile dozing duties with switching of ore cars at railhead. Multi-purpose uses of this tractor keep it busy at all times, save money otherwise lost in supporting idle men and machinery.

You get three tools in one when you buy a 208 hp SwitchTractor. This powerful, coupler-equipped, rubber-tired tractor is an off-track switcher, a heavy-duty dozer, and an all-purpose towing vehicle. The basic Tournatractor, to which a standard RR coupler has been added to make the SwitchTractor, has proved its worth on many major rail-lines during the past 10 years.

This versatile tractor handles scattered car spotting assignments in between regular dozing or towing chores. Coupler-equipped, it can haul up to 1 million gross lbs. on a 1% ascending grade. In practice, this means it can push or pull 18 empty or 5 loaded freight cars.

No time lost clearing track

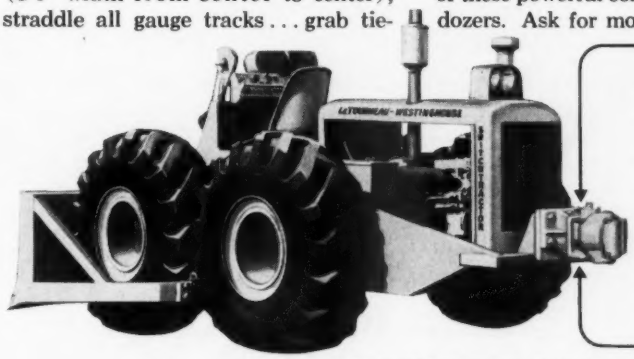
There's no need to clear tracks between your switcher and the cars you want spotted. SwitchTractor speeds to the scene via shortest route — detouring blocked tracks, crossing rails, ties, ditches — traveling by highway, driveway, right-of-way, or along the tracks. Tires flex over obstacles, won't damage switches or chamfer ties.

Operator chooses own route

With SwitchTractor operator picks his own fastest route to job . . . links up cars involved without on-track maneuvering. Big, wide-gauge rubber tires (8'4" width from center to center), straddle all gauge tracks . . . grab tie-ends with *double* the grip of steel wheels on steel rails.

When switching is completed, versatile SwitchTractor speeds back to its regular dozing or equipment-towing duties. There's *no idle time* with this multi-purpose yard tool!

Analyze your scattered car-spotting and dozing activities. You'll find there's a place in your yards for one or more of these powerful combination switcher-dozers. Ask for more details.



Here is close-up view of SwitchTractor, showing drawbar mounting of rig's rail coupler. SwitchTractor is available from your distributor . . . or, if you already own a Tournatractor, it can be fitted with a coupler in the field.

SwitchTractor—Trademark; Tournatractor—Trademark Reg. U.S. Pat. Off. ST-1342-RR-b

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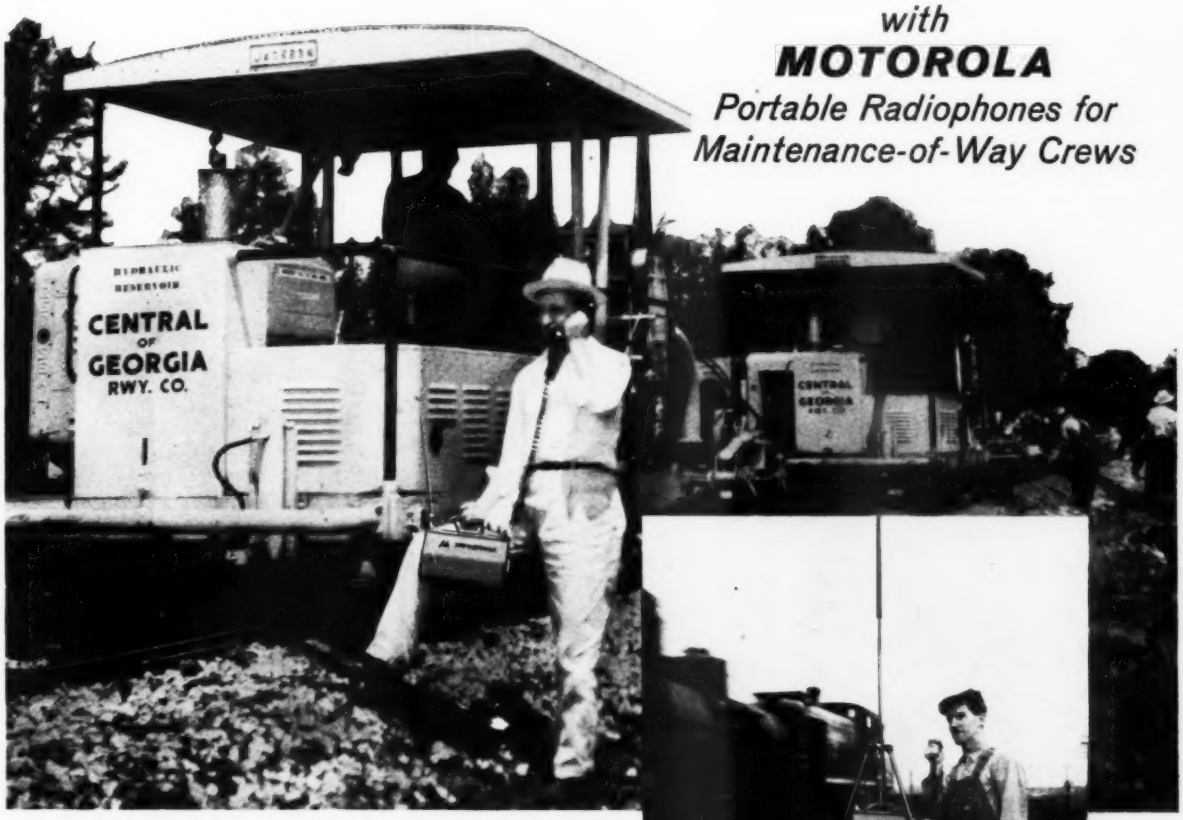

Gang foreman keeps in constant touch with approaching trains.

Flagman with tripod mounted radio.

Ask the foreman of a two-way radio-equipped road gang what benefits his railroad and his men get, and you may be surprised and interested in the answer. With constant information on the approach of trains, he has more time to work before clearing the track. The result of this close coordination with oncoming trains often is hundreds of additional feet of track work per day.

Then, look at Maintenance-of-Way radio from the operating standpoint. Fewer costly train stoppages, regular schedules through work areas, lower per diem costs, better all 'round operating efficiency.

Let a Motorola railroad specialist show you why Motorola equipment has been chosen by 100 U.S. Railroads . . . how it will pay for itself in operating savings.

MOTOROLA *2-WAY RAILROAD RADIO*

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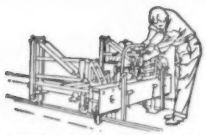
W84 SERIES B Hydraulic Spike Puller is primarily for use in tie gangs. Light in weight, it features a ball and socket-mounted pull assembly. Will pull from either rail without change-over.

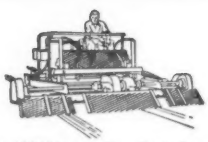
When you think of

TIE RENEWAL

. . . think first of **Fairmont**

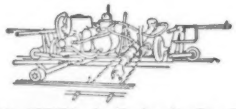


W86 SERIES A Hydraulic Rail Lifter features a spring-counterbalanced lifting arm, welded steel supporting frame and a direct-driven hydraulic pump. Two-man track removal.



W87 SERIES B Tie Bed Scarifier with one operator can dig a tie bed a minute to a controlled depth at right angles to rails. Assembly and drive are hydraulically operated.

W90 SERIES A Tie Handler inserts or removes ties quickly and requires only two men for operation. Simple design and sound construction. Self-propelled. Two-way operation.



W68 SERIES A Hydraulic Tie Remover removes ties at an average rate of approximately one per minute. Ruggedly built with a minimum of moving parts. Two-man operation.

W83 SERIES B Tie Nipper *(not illustrated)* features a simple linkage and lever which guarantee positive opening and closing of hooks. The handle can be placed in three different positions.

Fairmont tie renewal equipment cuts costs and down-time in every phase of the operation. Built for limited personnel operation, Fairmont products are fast . . . safe . . . rugged . . . and as light in weight as is practical. They are the result of hundreds of hours of careful design, engineering and on-the-job testing. If tie renewal figures in your plans, study the representative equipment illustrated here and then contact us for complete, detailed information. You'll discover that if you have a job to be done—there's a Fairmont product to do it!

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RAILWAY

TRACK and STRUCTURES

MARCH, 1957 **Vol. 53, No. 3**

"Dear Readers" **18**

Since 1922 we've devoted our March issues to mechanization—a topic that's gotten progressively "hotter" as the years passed.

News Notes **33**

A resumé of current events throughout the railroad world, prepared at press time by the *RT&S* staff.

Railroading Is Responsibility **57**

A guest editorial written on the occasion of the AREA's 56th annual meeting by Wm. J. Hedley, president of the association.

AREA Program **58**

Again, *RT&S* brings its readers—well in advance—the program of the annual meeting to be held March 4-6 at St. Louis.

Forward Look in Mechanization **59**

Changes in maintenance practices and organization came about when the Katy looked into its M/W methods and costs.

"On the Air" for On-Track Time **63**

An *RT&S* staff report on the ever-increasing use of two-way radio communications in M/W and B&B work.

So He Leased the Equipment **66**

Leasing proved the answer to one M/W officer who, lacking the money to buy, rented the machines he needed so badly.

The 'Wire' **68**

Lining curves with a string is fairly common practice—now they're surfacing track with a wire!

Are the Bridge Forces Lagging? **70**

More and more roads are taking another look at their bridge gang costs. More complete mechanization appears to be the answer.

News Briefs in Pictures **71**

How a tall chimney was blasted at its base to fall neatly into its "grave," dug in advance.

Products of the Manufacturers **72**

What's new and different in '57—Our regular review of new and improved products which the manufacturers have recently offered.

What's the Answer? **82**

Painting oiled steel bridges—Off-track spraying equipment—'Cushion rails' in welded track—Short office partitions—Aluminum vs. galvanized gutters.

News of the Month **96**

To the Editor **108**

Helps from the Manufacturers **108**

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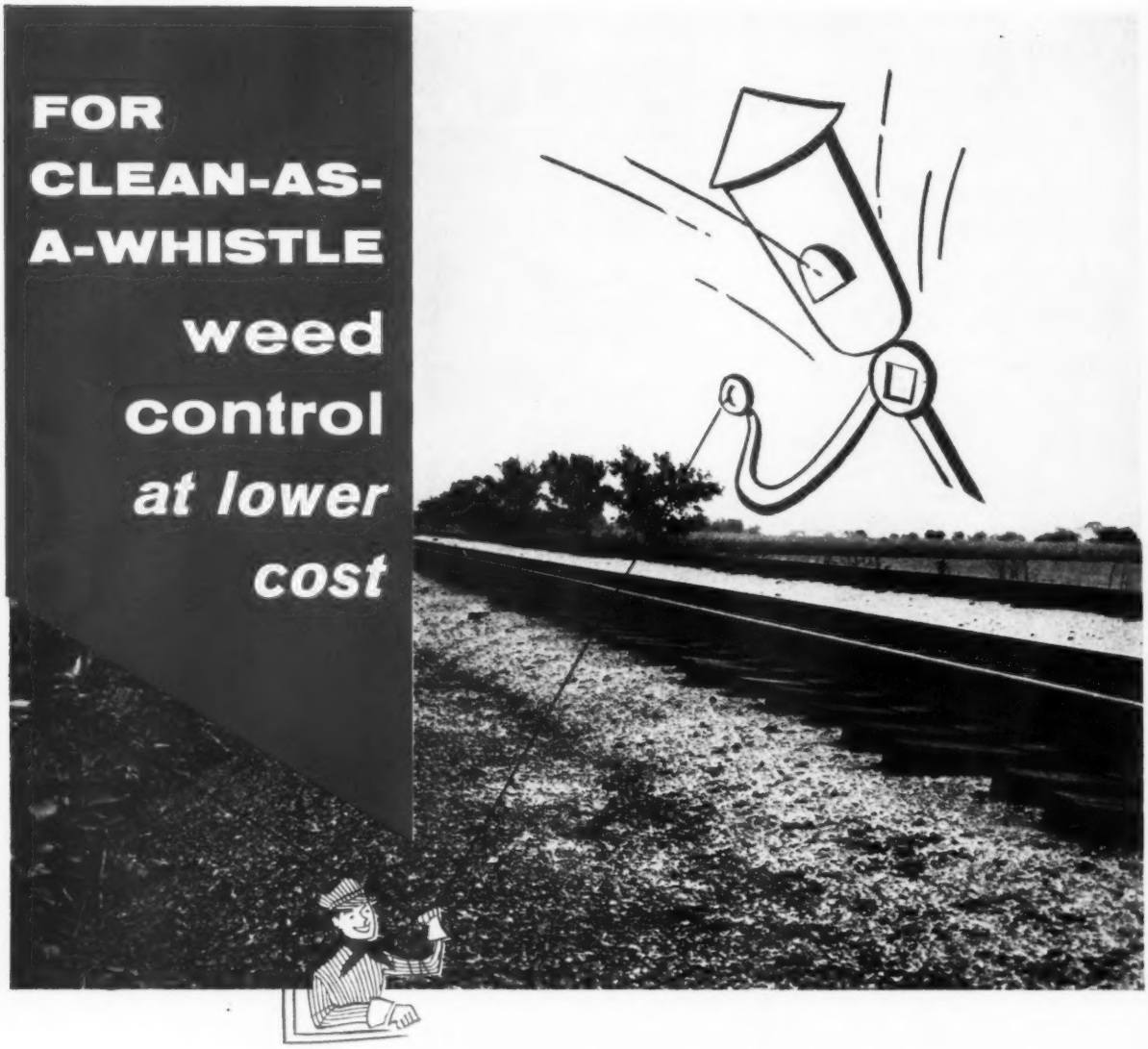

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RAILWAY TRACK and STRUCTURES

Railroading Is Responsibility

A Guest Editorial

By WM. J. HEDLEY
President, AREA

The essence of railroading is service—dependable service. On-time performance is the constant goal of the operating department. And it takes a lot of cooperation from a lot of people to get every train safely to its destination every day at the time the traveler and the shipper have been promised it. Furthermore, the people who carry out this cooperative effort are spread out over a wide area. Cooperation under those circumstances requires the assumption of a high degree of responsibility by each individual.

The assumption of such responsibility by railroaders is an accepted tradition in the industry. More than tradition, it constitutes one of the intangible personal rewards realized from the performance of an allotted railroad task. For who is there that does not get a certain lift from the knowledge that in the performance of his duty he is helping his fellow worker and that they together are helping other individuals?

It is out of such activities that the fabric of our society is woven. As individuals in society we are dependent one upon another, and in groups we are likewise interdependent with other groups. Justification for the existence of the organizations of our society lies in the benefit they achieve for the individual members of our social order. That railroads serve a useful function is recognized in the fact that people are willing to pay for the transportation services they render. Performing these services with responsibility is the railroader's purpose. Always one of the prime ingredients of that responsibility is safety—safety for himself and safety for others.

Among railroaders, the men in train crews and those who serve in other capacities in freight or passenger service have the more direct contacts with railroad customers in the course of rendering service to them, but they are by no means the only ones on whom the responsibility for rendering good service rests. Railroading is a team-work business. For success the team needs top-notch executive and supervisory personnel. It needs information and guidance from the lawyers and accountants. Its agents can not do a good job without the assistance of others in the traffic department.

Train crews alone can not produce on-time performance. They need the direction of the train dispatcher, the alert cooperation of that lonely towerman at a remote crossing of another railroad, and the continuing efforts of the many people along the line, in the yards, and in the division offices. Good train performance requires good locomotives and cars, well maintained by the trained specialists of the mechanical department.

And last, but not least, good railroading requires good fixed properties—roadway, track, structures, signals, and communication facilities. Efficient and effective maintenance of all of these fixed properties is a fundamental part of good railroading, and the men who perform this maintenance work carry on their shoulders a substantial share of the responsibilities of railroading. By and large they carry them very well. With constant vigilance and care the tradition of responsibility can be maintained. In a very genuine sense, railroading is a responsibility.

Other AREA Officers

Ray McBrian
Senior Vice-President

B. R. Meyers
Junior Vice-President

Neal D. Howard
Executive Secretary

PROGRAM

Fifty-Sixth Annual Meeting

American Railway Engineering Association

March 4-6, 1957

Sheraton-Jefferson Hotel, St. Louis

MONDAY, MARCH 4

Morning Session—9:30 to 12:00
Gold Room

Address by President Wm. J. Hedley
Report of Executive Secretary Neal D. Howard
Report of Treasurer A. B. Hillman
Greetings from the Signal Section, AAR, A. L. Essman, chairman
Greetings from the Electrical Section, AAR, R. I. Fort, past chairman
Address—"The Engineer's Responsibility for Progress," by R. G. May, vice-president, Operations and Maintenance Department, AAR
Address—"Unemployment Tax Reduction Through Employment Stabilization," by Thomas M. Healy, member, Railroad Retirement Board
Address—"Growing with the Nation," by Major General Emerson C. Itschner, chief of engineers, Department of the Army
Address—"Research Review" (illus.), by G. M. Magee, director of engineering research, AAR

Afternoon Session—2:00 to 5:00
Gold Room

Reports of Committees
- Contract Forms
  - Address—"Why Not Railroad Protective Insurance that Protects?" by C. D. Dawson, superintendent of insurance, B&O
- Records and Accounts
- Yards and Terminals
  - Address—"Car Rollability on Grades" (illus.), by F. R. Smith, chief engineer, Union Railroad
- Economics of Railway Location and Operation
  - Address—"Train Transit Time," by Dr. L. K. Sillcox, honorary vice-chairman of the board, New York Air Brake Company
- Waterways and Harbors
- Highways

Dinner Party, Gold Room, 7:00 p.m.
Dinner, entertainment and dancing

TUESDAY, MARCH 5

Morning Session—9:00 to 12:00
Ivory Room

Reports of Committees
- Water, Oil and Sanitation Services
  - Address—"Handling of Radioactive Materials When Involved in Leakages and Fires," by Dr. W. G. McKenna, chief chemist, AAR
- Cooperative Relations with Universities
  - Address—"Engineers a Commodity," by Earl C. Kubicek, director of alumni relations and placement, Illinois Institute of Technology
- Wood Bridges and Trestles
  - Address—"Fire Retardant Coating Research," with film "AAR Participation in A-Bomb Studies," by Seymour Coburn, chemical engineer, AAR
- Impact and Bridge Stresses
- Masonry
  - Address—"Prestressed Concrete Bridges in Europe" (illus.), by E. J. Ruble, research engineer structures, AAR
- Iron and Steel Structures

Association Luncheon—12 Noon
Gold Room

Afternoon Session—2:30 to 5:20
Ivory Room

Reports of Committees
- Clearances
- Waterproofing
- Wood Preservation
- Buildings
  - Film—"Faces and Figures," telling the story of hardwood veneers for plywood, from the cutting of the trees to the ultimate use of plywood
- Maintenance of Way Work Equipment
- Economics of Railway Labor
  - Address—"Where Most of Your Dollar Goes," by E. H. Hallmann, director of personnel, Illinois Central
- Ties
  - Panel Discussion—"Ties—Their Use in Track," by L. C. Collister (Santa Fe), moderator; L. E. Gingerich (PRR); L. P. Drew (UP); M. J. Hubbard (C&O); W. E. Fuhr (Milw. Road); and R. B. Radkey (IC)

WEDNESDAY, MARCH 6

Morning Session—9:00 to 12:20
Gold Room

Reports of Committees
- Special Committee on Continuous Welded Rail
- Rail
- Track
  - Panel Discussion—"Should the Railroads Make More Extensive Use of AREA Trackwork Plans?" by H. B. Christianson, Sr. (Milw. Road), moderator; M. J. Zeeman (Santa Fe); K. E. Dunn (NYC); F. W. Creedle (American Brake Shoe Co.); John Ayer, Jr. (D&RGW); W. R. Bjorklund (NP)
- Roadway and Ballast
  - Address—"Soil Engineering Problems During the Construction of the Atlantic Railroad in Colombia, S. A." (illus.), by Rockwell Smith, research engineer roadway, AAR

Closing Business
Installation of Officers
Adjournment

COMMITTEE MEETINGS

Luncheons or meetings of individual committees are scheduled to be held during the convention as follow:

Monday

Roadway and Ballast—meeting—2:00 pm, Room 8
Ties—luncheon, 12:00-3:00, Room 6
Track (subcommittee chairman only)—luncheon, 12:00-2:00, Room 5
Records and Accounts—luncheon, 12:00, Room 4
Water Oil and Sanitation Services—luncheon, 12:00, Room 9
Yards and Terminals—luncheon, 12:00, Room 3
Economics of Railway Location and Operation—luncheon, 12:00, Room 2
Contract Forms—luncheon, 12:00-2:00, North Room
Economics of Railway Labor—luncheon, 12:00, Room 7
Clearances—meeting, 2:00, North Room

Tuesday

Buildings—meeting, 10:00-12:00, Room 6
Wood Preservation—meeting, 9:00-12:00, Room 3

Note—All numbered rooms are on second floor; other rooms are on mezzanine floor

You're Invited—To join the *RT&S* staff at the Simmons-Boardman "Coffee Bar"—8:00 to 10:00 each morning in the North room—fruit juice, rolls, coffee—Come and meet your friends.

Katy takes

Forward Look

In mechanization

The Katy recently took a long, hard look at its track-maintenance methods and costs.

Out of its deliberations came a program of mechanization which called for basic changes in the road's maintenance practices as well as a far-reaching reorganization of the track forces.

The program, involving an expenditure of over half a million dollars for work equipment, is already producing results in the form of lower costs and higher maintenance standards.

PROGRESS in mechanization of track work on Katy is symbolized by view from operator's seat of Track Maintainer.

• Mechanization of track work on many roads has been a gradual development, one step at a time. On the Missouri-Kansas-Texas Lines, however, the transition was made last year in a single giant stride. Approximately $525,000 were spent on work equipment in a program of modernization aimed not only at reducing the cost of maintenance but also at improving standards.

Basic purpose of the program was to create mechanized crews that would take over much of the work formerly done by section gangs. To this end the road established 13 small extra gangs (the equivalent of one to each main-line roadmaster), two timbering-and-surfacing gangs and two tie-renewal gangs, all highly mechanized. The surfacing gangs surface track and renew ties on the main line on a four-year cycle and are so equipped that they can be used as tie-renewal gangs when necessary. The tie-renewal gangs work on assigned territories on a three-year cycle basis. The 13 small extra gangs are termed the roadmasters' "mobile task force," and handle all other work too extensive for the section forces. Out-of-face rail renewals will continue to be handled, as in the past, by extra gangs organized for that purpose.

Lengthening of the territories of section gangs was an integral phase of the program. The 328 existing sections were reduced to 221 longer sections, including the yard and some branch-line sections which were not shortened and which will continue to function along former lines. The section forces will patrol track, spot and line track, insert a few switch ties, replace bolts and broken bars, tighten bolts, oil joints twice a year, apply dry-type weed-control chemicals under bridges, keep cattle off the right of way, and similar jobs. In general, each section crew includes a foreman and three laborers, but in the terminals more men are needed.

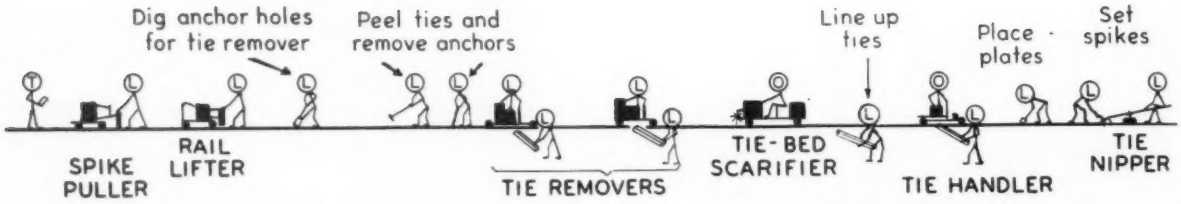
Makeup of "Task Force" Gangs

The 13 small extra gangs are each equipped with a 2½-ton Chevrolet stakebody truck of the hydraulic-dump type and two highway house trailers. Eleven of these gangs are also each equipped with an Ingersoll-Rand 3R36 air compressor, a four-tool tamping outfit and an I-R pneumatic spike driver. The trucks, which have canvas body covers, are furnished with hitches for hauling the house trailers and also have power winches having 250 ft of cable.

Each of these small extra gangs consists of a foreman and seven laborers. Frequently they are com-

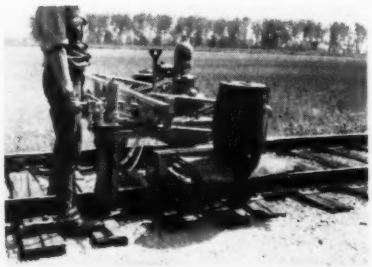
THE STORY AT A GLANCE

This organization . . .	*Giving these results . . .*
328 section gangs, using hand tools	High costs
Plus extra gangs for rail laying and out-of-face surfacing	Curtailed programs
	Deferred maintenance
Replaced by this force . . .	***With these results . . .***
221 section gangs	Lower costs
13 small mechanized extra gangs	More productive work
2 mechanized timbering and surfacing gangs	Systematized programs
2 mechanized tie-renewal gangs	Higher standards
Plus extra gangs for rail laying	

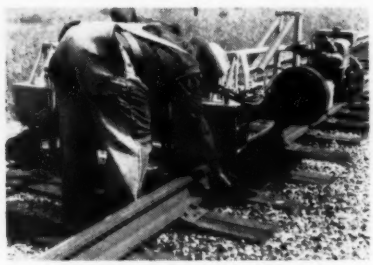


ORGANIZATION of the tie-renewal and surfacing gang, showing both men and machines. Man working on spike puller

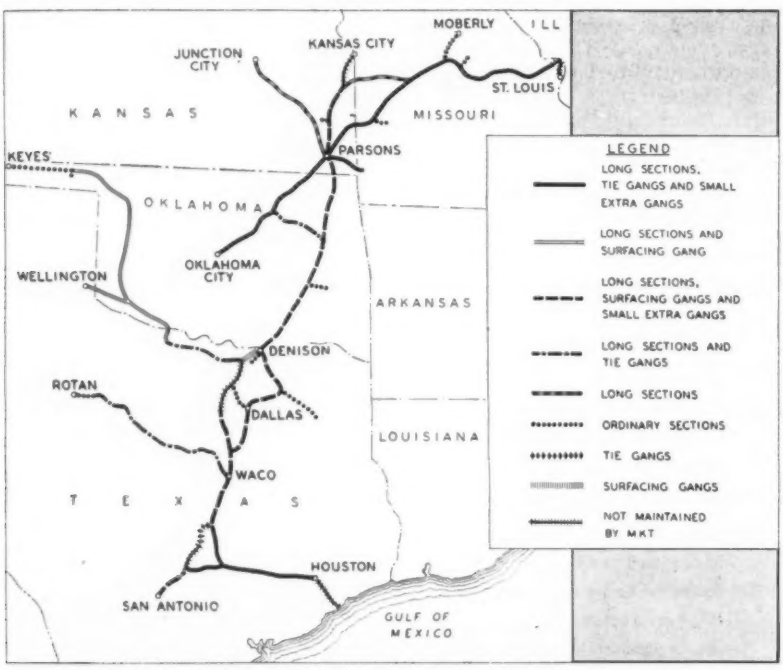
SET-OFFS were constructed by bulldozers about every half-mile to minimize time lost in clearing for trains. Surfacing gang equipment is shown here



SPIKE PULLER is the leading unit in both types of mechanized gangs.



RAIL LIFTER permits laborer to remove tie plates from ties to be renewed.

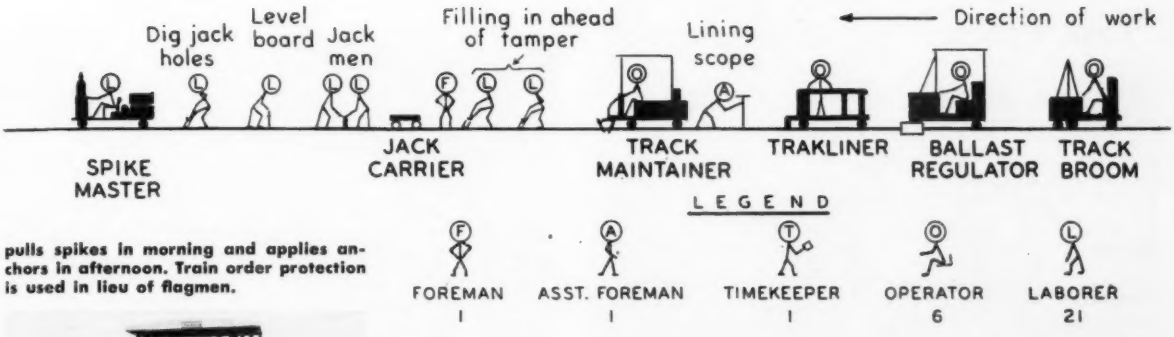


DEPLOYMENT of reorganized forces is shown here. In general, mechanized tie and surfacing gangs are used on high-speed main lines and tie gangs on other main lines.

bined with the section forces for transposing rail on curves, lining curves, raising joints, spotting track, changing out 112-lb and 115-lb frogs, loading rail and reworking road and street crossings.

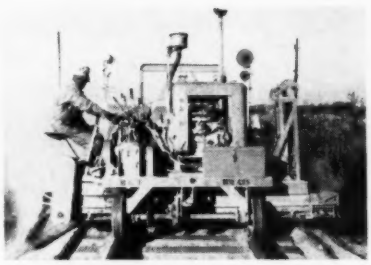
The two timbering-and-surfacing gangs work on a territory totaling about 737 miles. The patrolling, spotting and other track maintenance on this territory is handled by the long-section gangs and the roadmasters' task forces.

Each of the timbering-and-surfacing gangs consists of a foreman, an assistant foreman, a timekeeper, 6 machine operators and 21 laborers. They are assigned the following machines: A Fairmont spike puller, rail lifter, tie remover, shoe-point grinder, tie-bed scarifier, tie handler and tie nipper; an RMC Spike-Master; a Matisa jack carrier; a Jackson Track Maintainer; a Nordberg Trakliner; and a Kershaw Ballast Regulator, and track broom. The disposition of both the men and machines in these gangs is shown on an accompanying diagram. A motor car and trailers are



pulls spikes in morning and applies anchors in afternoon. Train order protection is used in lieu of flagmen.

USING 20 jacks on each side makes jack carrier necessary to keep up.



TRACK BROOM cleans tops of ties and is the last unit of tie-surfacing gang.

TIE GANG uses a Multiple Tamper instead of a Track Maintainer and one more nipper than surfacing gang. Also, tie gang does not use a jack carrier or broom.

used to get the men to and from the job.

These gangs renew ties and raise, surface and line the track. They make a raise of about 1½ in, using 20 track jacks to a side. The lines of this road north of Denison, Tex., are ballasted with chat, while south of Denison the ballast is either crushed-and-washed gravel or crushed limestone.

These gangs will surface about 3,600 track-feet per day with tie renewals averaging about 800 per mile. Allowing for delays caused by three trains a day, getting started in the morning, time off for lunch, and closing up at night, the gangs have an average of about 6 hr per day of on-track time.

Before the two surfacing gangs were established, the track was surfaced out-of-face only behind rail renewals. With the new organization, the road not only raises, surfaces and lines track behind the rail-laying work but also on about 185 miles of other track yearly.

The surfacing gangs are housed in camp cars. For each outfit, this equipment consists of three bunk cars, a car for the foreman, assistant foreman and timekeeper, a kitchen car, a diner, a locker-and-shower car, equipped with both hot and cold running water, and a water car which has an electric-driven pump.

Organization of Tie Gangs

The two tie-renewal gangs work on a territory approximately 1,216 miles long. These gangs are equipped with a Fairmont spike puller, rail lifter, tie remover, shoe-point grinder, tie-bed scarifier, tie handler and tie nipper; an RMC SpikeMaster and a LineMaster; and a Kershaw Ballast Regulator and blades. After studying the initial performance of these gangs another tie remover and a Jackson Multiple Tamper were added to the machine consist to give these gangs more flexibility in the types of work they can be called upon to do. A motor car and trailers are used by each of these gangs for transporting the men to and from the camp, which consists of camp cars similar to those used by the surfacing gangs.

Before these mechanized tie gangs were organized, tie renewals were made by hand at the standard rate of eight ties per man per day. As first equipped, the mechanized tie-renewal gangs average 477 ties per day. But, after the second tie remover was furnished to each gang, they have averaged 585 ties per day, which is the equivalent of 21+ ties per man per day—nearly three times the former rate. Tie renewals run at the rate of about 768 ties per mile. New ties are distributed from a work train by the section men.

In addition to the better production, the road also obtains a more uniform tie condition by having a roadmaster inspect the ties just prior to the arrival of the gang and mark those to be renewed. Previously, the ties were renewed on a scattered basis. The tie-renewal gangs also line the track behind them, which work was not done when ties were removed by the

"Task Forces" for roadmasters

MEN in small extra gangs are housed in trailers. Each of these gangs also is furnished with a 1½-ton dump-body truck.

SMALL extra gangs form the roadmasters' "task force." Most are furnished with a four-tool tamping outfit.

section forces. The railroad views the lining as a bonus in obtaining better track conditions. The lining is done by an assistant foreman, using a Hayco lining scope, who directs the operator of an RMC LineMaster or Nordberg Trakliner.

Plan in Effect a Year

The new track-maintenance plan was put into effect in March, 1956. Katy officers report it already has exceeded their most optimistic expectations. They say that more track maintenance has been accomplished than was possible in previous years, that the track has been substantially improved, and that the value of all benefits accruing from the new plan has more than paid for the cost of the machines.

It was anticipated that the work performed by the new maintenance organization would not immediately come up to the expected optimum output because the men would require time to become familiar with the operation of the equipment. However, experience on the Katy shows that the gangs become proficient in their work within a period of four days.

To permit the equipment to be set off the track, the road built set-offs at half-mile intervals with bulldozers. These units managed to work fast enough to stay about 30 to 40 miles ahead of the gangs. They also performed such work as cleaning out channels and building up approaches to road crossings.

The Why and the How of the Katy's New System

Before the mechanization program was undertaken the Katy's basic track-maintenance force consisted of 328 individual section gangs. This force handled tie renewals, raised joints, spot surfaced and lined track, tightened bolts, oiled joints, unloaded grain doors, took care of station janitor work, and performed the other many duties formerly assigned to section forces. Rail laying and out-of-face surfacing were done by extra gangs. The routine maintenance by the section force was accomplished, for the most part, with hand tools.

Because of higher costs, available funds for maintenance did not permit track standards to be maintained by the old methods. Out-of-face surfacing had to be curtailed, and the years of spot surfacing and lining resulted in hard-riding track, acceleration of tie damage, poor alinement and surface-bent rails. Section forces consisted of a foreman and three men on main-line sections, and fewer on branch lines, so that section crews had to be bunched whenever any extensive work was attempted, resulting in loss of time while the crews were traveling to and from the point of work.

That was the situation on August 1, 1955, when a study was begun for a proposed new plan of organization and mechanization of the track forces. October 1, 1955, was the target date set for the completion of the study so that a new plan of track maintenance could be instituted for the following year's work. The study revealed that the section forces spent about 28 per cent of their time handling, unloading and inserting crossties, 54 per cent in spotting and lining track, and 18 per cent on other work.

The objective was to develop a plan of reorganization and mechanization based on these premises:

(1) It must be as safe for operation as the existing one.

(2) It would be based on actual studies of different organizations on as many roads as the prescribed time permitted.

(3) It would be in line with plans which had proved successful on other roads.

(4) It would have to show savings after making (a) a charge of 20 per cent of the initial cost of the machines per year, for straight-line depreciation; (b) a charge of 10 per cent of the first cost of the machines, per year, for maintenance and operating supplies; and (c) a yearly interest charge of 6 per cent on the total investment required.

(5) It would be based on conservative production figures.

L. R. Deavers, process engineer of the Katy, visited four other railroads—the Southern, the Santa Fe, the Frisco and the Rock Island—to study their methods. From his study a new plan of maintenance was conceived by T. S. Carter, the Katy's chief engineer, P. O. Ellis, assistant chief engineer maintenance, and Mr. Deavers, to relieve the section forces of tie-renewal work and permit economies to be effected through mechanization. When it had been thoroughly discussed by all concerned, the plan was approved by the road's management, and orders were placed so that the necessary machines would be on hand in time for use during the 1956 working season.

an RT and S STAFF REPORT

RADIO

To get the most in PRODUCTIVITY, more and more roads are going . . .

. . . 'On the Air' for On-Track Time

What are the advantages which can be gained from the use of two-way radio communication in maintenance of way and bridge & building work? What obstacles lie in the path of further adoption of this time-saving mode of communication? What types of equipment are applicable? For the answers to these and other pertinent questions on the subject, *RT&S* editors have canvassed both railroad and electronics industry people.

FOREMAN checks for arrival time of next train, so machines will spend as much time as possible on track. (C of Ga Photo)

● It was 2:30 in the afternoon of a typical summer day. The foreman of the tie-renewal gang consulted his watch and the lineup of trains he had received at 11:00 that morning from the dispatcher through the local agent-operator. He was renewing ties on single-track, main-line territory. There was a good setoff location only a few hundred feet ahead.

According to his lineup, No. 14 was due at the next station to the north—3½ miles away—at 2:45. He did the logical thing: he moved his gang on up to the setoff and began to vacate the track. This took less than ten minutes. Three o'clock came and went. Then 3:15. No train. Finally, at 3:35, No. 14 came through. Lost: almost an hour of otherwise productive track time—enough time, in fact, had the foreman known, the gang could have worked on to the next setoff.

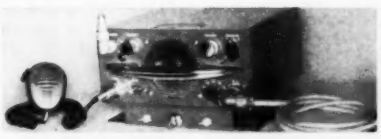
The foregoing is not a recital of an unusual circumstance. On the contrary, this sort of thing happens many times daily across the country. But something *is* being done about it. Labor and machine costs are too high for railroad management not to do all in their power to seek more productive time for track gangs, be they small local section gangs or large mechanized system gangs. An examination of the problem led to a single conclusion: there was a serious gap in interdepartmental communications.

How It All Began

Around 1946 the railroads began, one by one, to go in for the use of radio communications to improve their operating efficiency. Radio communications were set up between head end and caboose, between train crews and wayside stations. Improvements in radio equipment had come about as a result of intensive research by the electronics industry in World War II. These improve-

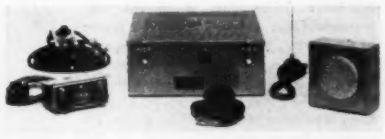
RADIO IN REVIEW

★ *The equipment illustrated and described on this and the succeeding pages is presented to give you—the reader—some idea of what is available today in the way of mobile and portable two-way radio equipment. Due to space limitations, many items had to be left out. Mention of heavy-duty train-type radio, for instance, has been omitted, as has discussion of specialized equipment such as microwave and inductive carrier. For additional information on this or other equipment, write the manufacturer.* —Editor



BENDIX RADIO Division of Bendix Aircraft Corp., manufactures the Bendix "Bantam" shown above—a low-power, two-way f-m radio which can be used as either a mobile or a base station, operating from a variety of power sources. Company also makes a complete line of portable and mobile radio equipment for carrying by hand and for installation in automobiles, trucks, motor cars, etc.

Write: Bendix Radio, Dept. RTS, Baltimore 4, Md., for further information.



FLEETCOM is the tradename under which the Communications Company, Inc., manufactures its complete line of mobile and portable two-way f-m radio equipment. The model 300-FG-6/12 shown above operates on either 6 or 12 volts, features control head and speaker which can be mounted near operator's or driver's seat. Various models have outputs from 20 to 55 watts to meet a variety of conditions. Write: Communications Co., Inc., Dept. RTS, Miami 34, Fla.

FROM HIS CAR . . .

DIVISION ENGINEER can contact gang foremen from his automobile and keep himself informed of the gangs' progress.

ments, incorporated commercially, made it possible for train crews and dispatchers to know just where on the railroad everyone else was.

But not so the trackmen. Radio equipment was still considered too bulky for M/W use. Labor agreements which had to undergo considerable amendment to permit the use of train radio, had to be amended further to permit foreman to talk with their dispatchers, operators and the crews of approaching trains.

Certain of the original obstacles still exist. Equipmentwise, the manufacturers are doing all they can to lick the problems of weight, size and power. Laborwise, many roads now have agreements which permit direct communication. Others have contract modifications "in the works."

New Uses Being Found

From the day the first foreman talked direct by radio with his dispatcher or a train crew, an ever-increasing number of new uses has been found for radio communication in trackwork. Entire gangs are now radio equipped. Foreman can talk to the operators of individual machines, with their flagmen and, either directly or indirectly through the flagmen, with the crews of approaching trains. Supervisors, with radio equipment installed in their offices and automobiles, can talk with gang foremen and keep themselves informed on up-to-the-minute developments.

Bridge and building gangs can be dispatched where needed by means of two-way radio installed in trucks. The lone track inspector, equipped with a small, lightweight portable radiotelephone, can cover more mileage per day, knowing at all times the status of approaching trains. In emergencies, radio has proven itself an indispensable tool. Wrecking cranes can be routed to the scene of trouble with utmost efficiency and directed at the scene by radio communication.

Extending the Range

To lick the distance problem where the small portable and mobile radio equipment lacks the power to "get through" to, say, the dispatcher, radio-minded roads have installed wayside stations which effectively increase the range of these otherwise limited-range units. These stations, either with an operator or unattended, enable the road to effectively dispense with wire communication during periods of emergency.

Assuming that all the necessary approval has been granted, sufficient funds appropriated and other red tape cut through, where does the typical M/W officer begin in equipping his forces with radio? He knows what machines and vehicles should, for maximum effectiveness, be radio equipped. He knows which personnel should be equipped with portable radiotelephones. He must also estimate the maximum range over which each unit or radio equipment must operate. To this figure he should add a margin of safety for times when atmospheric and other conditions might hamper communications. The equipment he installs in his gangs, vehicles, etc., must operate on an assigned frequency somewhere between 152 and 162 megacycles. This is the spectrum which has been assigned railroads by the Federal Communications Commission. He will probably want equipment which will operate on two or more frequencies, or "channels." One, for intra-gang communication, the other for communication with other facilities.

Equipment Must Be Rugged

The equipment he selects must be capable of withstanding the rigors of track work. Shock mounting is of especial importance—two days service on a tamper will give a unit of radio equipment the amount of vibration it would receive in two years' service in an automobile. Weatherproofing is also of prime importance.

There are various types of radio equipment available today that will meet the requirements of M/W work. A number of these units are described separately in this article. Generally speaking, most of the two-way radio equipment designed for mobile use (i.e., installation in

RADIO

FEDERAL Telephone & Radio Co. manufactures several different types of two-way, phase-modulated equipment for use in vehicles and on all types of track machines and conveyances. The model FTR 156-10 shown here operates from either 6 or 12 volts with a power output of 10 watts. The unit weighs 34 lb. Other equipment offered by the manufacturer includes the FT 153-10 and FT 158 models. They both incorporate separate control heads and speakers which may be mounted at the operator's position on track machines and under the dashboards of automobiles and trucks. The FT 153-10 is available with either 6- or 12-volt power supply, has 10-watt output. The FT 158 also operates from either 6 or 12 volts and has an output of 50 watts. Write: Federal Telephone & Radio Co., Dept. RTS, 119—8th St., Passaic, N. J.

PAK-FONE, a battery-operated portable unit, is manufactured by the Industrial Radio Corp. The model H/M shown here weighs 11 lb when equipped with batteries, antenna and microphone. It features built-in loud speaker and connections for external power supply. Larger models are available with wet rechargeable batteries and with 3- and 5-way power supplies for operation from different sources. Pak-Fone models range in weight from 11 to 32 lb. The manufacturer also produces a "Field-Fone," which weighs 8 lb enclosed in a leather carrying case with shoulder strap. A somewhat larger model of the Field-Fone, the FF-D13, weighs 13 lb. All-weather carrying cases are also available for all Pak-Fone models. Write: Industrial Radio Corp., Dept. RTS, 428 N. Parkside, Chicago.

automotive-type vehicles) can be successfully installed and operated on most classes of track-maintenance machinery and, of course, in automobiles and trucks. In some instances, it may be desirable to install heavy-duty train-type radios on larger pieces of equipment such as spreaders, ditchers, plows, ballast cleaners and, perhaps, some tampers. Portable "packsets," "Handie-Talkies," and other such hand-held or shoulder-strap supported units have considerable utility. Many of the units are designed to operate from a variety of power sources: batteries (including 6- and 12-volt storage batteries), generators and commercial power.

Power—From Where?

Furnishing power for the operation of the radio equipment is a problem which must be solved in each particular instance. A set for use on a motor car would, most probably, operate from the car's storage battery or, perhaps, a separate generator-charged battery. On the larger machines, it might be desirable to install a generator-type power source. Portable units will, of necessity, be operated from self-contained battery power supplies.

Practically all of such radio equipment in use today incorporates frequency modulation (fm). This is for two reasons: First, an f-m transmission doesn't occupy as much space (bandwidth) in the frequency spectrum as do other forms; thus it is possible to incorporate a greater number of channels in a specific frequency range. Secondly, f-m communication incorporates provision for the elimination of static. Most units are equipped with a "squelch" control with which the operator can reduce the noise or static level in relation to the signal being received.

Basically, a two-way radio "set" is made up of four separate units. These may all be contained in a single housing or, as is the case with certain mobile equipment, in separate pieces. The four basic components are: the transmitter; the receiver; the power supply; and the antenna. When the operator speaks into his microphone or into the mouthpiece of his telephone-type handset he activates the transmitter which takes his voice message, amplifies it, converts it to radio frequencies and feeds it to the antenna. The antenna serves the dual purposes of radiating the signal generated by the transmitter and receiving the signal which is fed into the receiver. The receiver takes this signal, converts it back to voice frequencies, amplifies it and feeds it into the loudspeaker or telephone receiver, as the case may be.

The function of the power supply is to take power

ON THE TRACK . . .

FLAGMAN uses tripod-mounted antenna for increased range. Two-channel operation lets him talk with foremen and trains.

from the available power source—battery, generator, commercial power line, etc.—and raise it to the proper voltages required for the operation of the receiver and transmitter. The trend today is toward lower and lower power requirements. Transistors and miniature-type tubes do not require as much operating power as do older components. Research is constantly being carried out to futher lower these power requirements and to find additional power sources, such as solar batteries.

Radio Maintenance

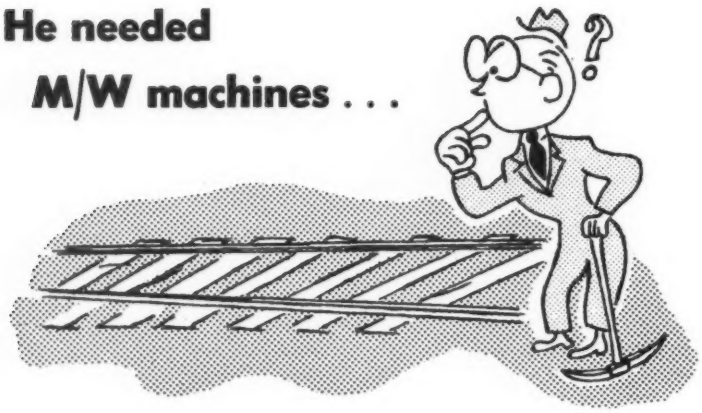
Once he gets his forces equipped with radio, the M/W officer will find that a certain amount of maintenance will be needed on the equipment. Normally, if the road has radio maintainers who service train, wayside and base station equipment, maintenance will be handled by the communications department. Such maintenance may consist of field repairs, or complete replacement while the defective unit is sent to a central repair point. With proper care, the required maintenance will be little. Manufacturers, too, maintain radio service facilities throughout the country. Machine operators, foreman and others who use the equipment should be fully instructed, not only in the operation of the equipment, but also in the proper methods of preventive maintenance.

Our M/W officer, once he has his forces radio-equipped, will find, as many others have before him, that he has, at last, found a cure for one of his major "headaches."

THE "IMP"—Industrial Radio Phone, is being produced by the Kaar Engineering Corp. Designed for low-power industrial radio service, this unit weighs 20 lb—24 lb when equipped with a shock mounted base. The unit can be used as either a base station or as a mobile station. It operates from 6- 12- and 117-volt sources. The loudspeaker is self-contained. An external speaker can be connected to the "Imp" to extend hearing of incoming transmissions. The normal range of the unit is approximately two miles using the 18-in antenna which is supplied with the equipment. An external antenna can be connected to extend the communication range to up to nine miles. Without the shock-mounted base, the unit measures 12½ in by 8¼ in by 5¼ in. Write: Kaar Engineering Corp., Dept. RTS, Palo Alto, Cal.

MOTOROLA produces a wide range of both portable and mobile two-way radio equipment which can be used in m/w work. The Handie-Talkie shown here is one of several models available with either self-contained loudspeakers or telephone-type handsets and dry or rechargeable wet cell batteries. Transistors are incorporated in many of the units, adding to their low weight. Motorola also has available a small hand-held unit called the Handie-Micro-Talkie which weighs less than 2 lb. The Twin-V line of mobile radio equipment includes units for application in all phases of m/w and b&b work. The units feature a wide range of power supplies. Some are available as complete, self-contained units, others feature separate control and loudspeaker assemblies. Write: Motorola Inc., Dept. RTS, 4501 W. Augusta Blvd., Chicago.

He needed M/W machines . . .



. . . but he had money problems . . .

• You have been placed in charge of maintenance for a small railroad that had been contracting its tie renewals and surfacing work. The track is in good condition because it has been well maintained—but at a cost. You want to do all the work with company forces, but you are immediately faced with some difficult questions.

You have no equipment, remember, so you're confronted with the problem of getting your management to approve the purchase of over a hundred-thousand dollars' worth of machines. Will they go for that? If this expenditure could be amortized over a period of five years, you think they might. But you know that the service life of the machines you want is longer than that and you would have to spread the depreciation over a longer period.

When this maintenance was done in the past by track contractors, the cost was all charged to operating expenses. If you bought new equipment, that expenditure would be charged to capital accounts, and taxes would go up.

Another item! Where are you going to get the men to form these gangs? You will be increasing your maintenance payroll. Will that look good to management? And, how will you house these men?

Despite all of the questions that arise, there persists in the back of your mind a challenge to your ingenuity. You know you should be able to do this work cheaper with your own forces than it can be done under contract. The contractor has to have men and equipment—just as you do—and he also has to make a profit on his work, which you don't. So there just must be a way.

These are some of the thoughts which ran through one man's mind when he took over the maintenance of a railroad. And he figured a way of doing it while still saving money.

The maintenance sequence he wanted was to relay rail on a piece of track, timber it and surface it. There would also be some track where rail would not be required but which would need timbering and surfacing; and other track which would need surfacing only. Three mechanized system gangs, i.e., rail-laying tie-renewal and surfacing, would suffice to do all this work, he concluded.

He listed the track machines he had and those he required, then the number of men needed to man the machines and do the work. He found that he needed 25 men each for the rail-laying and tie gangs and 16 men for the surfacing gang.

With the cooperation of the Brotherhood of Maintenance of Way Employees a rearrangement of forces was worked out by reducing number of section gangs from 42 to 17, creating required system gangs and setting up the specialized classes of employees necessary to operate the new machinery. In the future, the section forces would be used for spot-surfacing work, the construction of side tracks, and general right-of-way maintenance, but not for making tie renewals or for major track resurfacing.

From his list of equipment, he found that he had enough for mechanizing his rail-laying gang but needed a substantial complement of new machines for his tie and surfacing gangs. For the tie gang he wanted: 1 Track Liner; 1 Mechanical Spike Puller; 1 Tie Installation Machine; 1 Multiple Spiker; 1 Ballast Regulator; 1 Motor Generator Set; 1 Van-Type Truck; 1 Panel-Type Truck; and necessary trailer units for housing. A power ballaster and power jack already on hand were assigned to tie gang.

For the surfacing gang, he listed: 1 Multiple Tamper; 1 Ballast Regulator; 1 Track-Broom; 1 Track Liner; 1 Motor-Generator Set; 1 Van-Type Truck; 1 Panel-Type Truck; and necessary trailer units for housing.

Taxes Are Important

These machines would represent an outlay of about $150,000, which is a considerable sum of cash to be tied up in equipment investment. In fact, because it could not be amortized within a period of five years, he felt it was too much to ask his management to approve. So our maintenance man looked into the feasibility of leasing this equipment.

He considered the possibility of leasing the equipment and having a portion of his rental payments apply on the principal, but, from the tax viewpoint, the entire outlay could not be considered as operating expense and the road would still have to pay taxes on the portion purchased. If the agreement with the leasing companies contained a clause with an option to buy, the net result would be the same, taxwise. But, if he leased the equipment outright, it would all be chargeable to operating expenses.

He decided upon a middle course which later was approved by his management. He would buy part of it and lease the larger machines. The units he bought were the trailer units and the trucks. All the

How one road completely equipped two newly organized track-maintenance gangs and saved money by renting the larger machines.

...So He Leased the Equipment

others were leased from Morrison Plan, Inc., and from Lawrence E. Pilot & Sons, Inc.

The equipment leases are for a term of five years, with the rental payments made monthly. The machines were bought new from the manufacturers and delivered to the railroad. In this case, the railroad elected to pay the transportation charges from the manufacturers' plants to its own line so as to keep these costs out of the leases. The leasing companies carried insurance on the machines for the first year, after which the railroad assumed the insurance premiums.

The machines remain on the railroad property for the full term of the leases, after which the railroad agrees to return the units to the lessors in good working condition, subject, of course, to normal wear and tear. The railroad takes over the warranty of the manufacturers' and thereafter, for the duration of the leases, maintains the units as if they were railroad owned, including the replacement of worn parts. A stipulation in the leases provides for an inspection to be made semi-annually by representatives of the lessors for satisfying them that proper maintenance measures are being taken.

Suppose, now, that a new improved model of one of the leased machines is introduced during the lease term, which will do the work faster or better? Is there any possibility of swapping the older model for the new? Our maintenance man provided for this contingency in the lease agreements. If, after the first year of the lease, he wants a new model, he will be furnished with it provided that he pays 90 per cent of the unpaid rental for the remainder of the lease term on the older machine and with the understanding that the lessor will sell the old machine and hand the proceeds of the sale over to the railroad. The rental for the improved model is then added to the lease.

In the event that our maintenance man wants to turn back a machine to the lessors and purchase his own unit, he can do so at any time after the first year of the lease. Also, if he wants to lease more machines, he can add the rental of these units to his lease agreements at any time.

Should our maintenance man want to do so, he can renew the lease agreements for another term of five years with the rental reduced to 25 per cent of that provided in the original agreement. Also, he can renew the leases for all the units or for only certain machines, and the renewed leases have a 30-day cancellation clause in them in the event that he should want to terminate the agreements.

Costs Are Lower

Looking back at the work he has accomplished during the year in which these leases have been in effect, our maintenance man is quite satisfied with his arrangement. Although his costs for the tie-renewal and surfacing work have not yet reached the low levels attained by some roads for doing the same work, his costs are lower than when this work was done under contract. Already his tie-renewal costs are down 50 per cent.

He has noticed that the costs have fluctuated a great deal and he attributes this to the inexperience of his men with the mechanical aids. He feels certain that, when they become more proficient with the use of these machines, his costs will be more uniform and will progressively move into line with the achievements of other roads.

Maintenance expense for the equipment has been normal and no different than what could be expected if the machines were owned by the railroad. At the end of the first season's work schedule, the road sent the machines to its repair shop where they were overhauled completely to make them ready for this year's work. A few units, i.e., the spike pullers, the multiple spiker and the Ballast Regulators, were used continuously until February of this year before being sent to the shop for overhaul.

No large amount of cash has been tied up in the equipment and no great increase in taxes has taken place, because the cost of the leased equipment has been charged to operating expense.

How It Works

Wire is stretched between the end carriages and through pointer mechanisms on the Tamping Power Jack. Scale at wire support on front carriage is set to indicate desired raise. A pointer on scale in front of operator on jack indicates amount of the raise at jacking location. Operator raises the grade rail until the pointer is slightly above the zero indication and brings the other rail to the correct cross elevation. The tie under the jack is then tamped to support the track.

ENTIRE ASSEMBLY moves as unit. Direction of movement here is to the left.

The 'Wire' . . .

. . . For Raising Track Without a Spotboard

● An entirely new approach to the correction of track profiles is represented in a device being offered by the Nordberg Manufacturing Company. It has been named the "Trak-Surfacer." In effect, the device takes the place of the conventional spotboard in track-raising operations. According to the manufacturer, it also eliminates, for all practical purposes, the necessity for running profiles and setting grade stakes.

What is it? How does it work? What are the results? These and other questions are answered below.

● What is the principle on which this method is based?

This new track surfacing device was developed from the original ideas of W. C. McCormick, a general roadmaster on the Seaboard Air Line. The basic principle is to form a moving reference line with the top of the grade rail through the use of a steel wire, 125 ft long, which is drawn tight.

● What equipment is used when raising track by this method?

The central unit is a Nordberg Tamping Power Jack which raises the track, tamps the tie at each jacking point to hold the raise and provides the propulsion power for itself and the reference wire. The wire is stretched between two four-wheel carriages, which are held apart from each other, and from the jack, by rods extending between a series of two-wheel buggies. Thus, the entire assembly is so constructed that it moves along the track as a unit.

All the sections used in the assembly, including those in the front and rear carriages, are made of aluminum. It is reported that one man can remove any of the principal components from the track, and that two men can remove all sections in about two minutes.

The Tamping Power Jack is so located in the assembly that a cross-level mounted on it is placed 25 ft from the rear carriage. The wire used is actually 250 ft in length and extends between the carriages on both sides of the jack. Two pointers are mounted on the cross level on the jack directly in front of the operator. Either pointer can be used depending on which rail is used as the grade rail. Only the pointer in contact with the wire on this side of the jack is used. The other pointer is locked out of position. Thus, the grade rail is always raised to the wire with the opposite rail being brought to correct cross level by means of the level bubble.

The manufacturer states that any Nordberg Tamping Power Jack can be used with the Trak-Surfacer without change. The Surfacer can also be used with the Nordberg Power Jack if desired. In that case a slight modification of the cross-level arrangement on the jack is made.

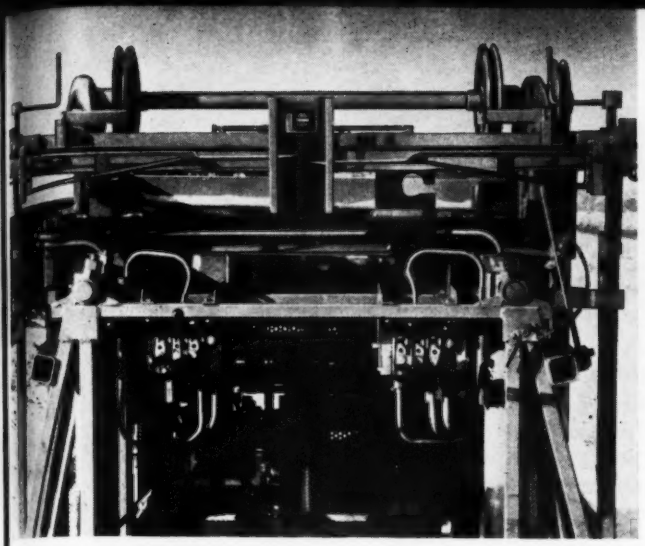
● Explain the procedure followed when using this equipment to raise track?

The equipment is assembled on the track as shown in the photograph at the top of this page, with the direction of movement being toward the left. The wire, which passes through the pointer mechanism on the Tamping Power Jack, is held tight by a weight. The assembly is then moved to the first raising spot.

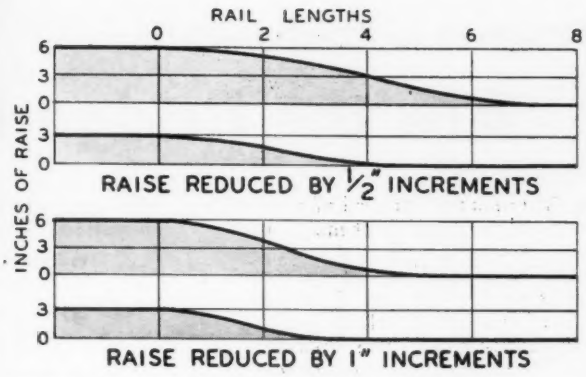
The wire suports on the front and rear carriages are set to scales by turning screws. When the adjustments indicate a zero reading, the height of the wire above the top of the grade rail at the front carriage is exactly the same as the height of the wire above the grade rail at the rear carriage. This would be the setting if no raise were to be made. To make a raise, the wire adjustment on the front carriage is set for the lift desired and the rear adjustment is left at zero.

The jack operator observes the location of the pointer on the scale. If it is below the zero mark, he raises the grade rail until the pointer is slightly above the zero indication, and brings the opposite rail to correct cross elevation by observing the position of the level bubble on the jack cross level. The tie under the machine is then tamped to support the track in the raised position. The operator then releases the jack and observes the pointer again. If he has not allowed for enough settlement, he lifts the track again to make it right.

There is no "trick" in learning the use of this equipment, according to the manufacturer. However, the operator of the Tamping Power Jack



JACK OPERATOR is governed by pointer and level bubble.



CURVES show run-offs made in 1-in or ½-in increments.

For years railroads have been lining curves with a string. Now they can raise track with a "wire." That's an informal name for a device that actually utilizes a wire, stretched on a moving assembly, to "sight" the track for a Tamping Power Jack.

must take more than ordinary care to be certain that his grade rail pointer is as near zero as possible on the scale and that the cross level bubble is as perfectly centered as possible before he leaves one jacking location and moves to the next.

If the track is not settled enough to bring the pointer and the level bubble to correct position, the operator can move the machine slightly and bring the tamping bars down on the tie to "knock it down" until the pointer and level bubble give the correct indications. He then moves to the next jacking location and repeats the operation.

● How is the equipment used when raising track on curves?

The wire support bars on the front and rear carriages are so mounted that they can be tilted like a track level. The same is true of the cross level mounted on the Tamping Power Jack. These tilting adjustments are used when raising track on a super-elevated curve. The low rail is ordinarily used as the grade rail.

When raising on curves, the wire support bars on the front and rear carriages must be kept level by lowering the side of the bar over the high rail. The super-elevation required at a particular jacking location is set by adjusting the cross level on the jack. This is done by lowering the end of the levelboard, which is over the high rail. Men are stationed at the front and rear carriages to accomplish the leveling of the wire support bars until full super-elevation is reached. When the spiral at the other end of the curve is reached by the front carriage, men must again be stationed at the carriages to keep the wire support bars level.

● How are run-offs made?

When the last full raise is made, a man stationed at the front carriage lowers each side of the wire support bar in increments of 1 in or 1/2 in per jacking location. The length of the run-off desired determines the amount of the increment. The wire support bar on the front carriage is lowered until a reading of minus 2 in is reached on the scales. It is said that this produces a safe and gradual run-off which can hardly be felt by a train passing over it.

● What procedure is used when raising through switches?

Only a few frame or structural members of the assembly extend outside the rails. This is important when raising track through switches. Naturally, because of the interference of the turnout rails, neither the jack rams nor the tamping mechanism can be used. However, the wire and the pointer on the Tamping Power Jack can be employed in raising the switch, using hand jacks within the limits of the long timbers. It is reported that a No. 10 turnout was raised in 16 min by this method.

● Just what results are obtained with this method and equipment?

The Trak-Surfacer is, in effect, a a constantly moving spotboard, with a distance of 100 ft from the front carriage (or spotboard) to the jack, and 25 ft from the jack to the rear carriage, which takes the place of a sighting foreman. Thus, the mathematical relationship between the distances is 25 to 125, or 1 to 5. If the front carriage should be in a slight depression or should rest on a slight hump, this 1 to 5 ratio reduces the error at the jack to 1/5 of the irregularity on which the front carriage rests. Thus, while the method does not produce a perfectly engineered profile, for all practical purposes, it improves the existing profile five times, according to the manufacturer. The point is also made that the more frequently the track is raised using this method, the more closely the resulting profile approaches one which would be considered perfect by the engineer.

The manufacturer also points out that the Trak-Surfacer produces the desired effect on both sags and humps. In other words, as the wire passes over a sag, a greater lift is indicated than would be produced on level track. When the wire passes over a hump a smaller lift is indicated than would be the case if the track were level.

What this means is that the raise for which the device is set can be considered as being the "average" raise desired, since high spots within the length of the wire will be raised less than the setting and low spots will be raised higher than the setting. This is illustrated by experience on one railroad where a 1 3/4 in raise setting produced some raises of only 1 1/8 in and some as much as 3 1/2 in.

Progress in Mechanization . . .

Are the Bridge Forces Lagging?

Canvass of bridge maintenance officers on this and other questions brings out these needs:

- **More power tools and equipment of existing types on some roads**
- **Development of new types of bridge maintenance machines**
- **More specialization of gangs to secure full utilization of machines**

● There is a great deal of conversation these days about mechanization. But almost all of it has to do with track maintenance. In recent years many new types of machines have been developed for performing track-maintenance operations, but very few, if any, genuinely new types have appeared for doing work on bridges.

There are probably sound reasons for the emphasis on development of track machines. On the surface, at least, it would appear that the need and the opporunity for savings in this branch of maintenance are greater than those to be found in bridge work.

At the same time, it can not be overlooked that sizeable sums are spent annually by the railroads for the repair and renewal of all types of bridges. In view of the absence of new developments and equipment in this field in recent years, it seems in order to pose a number of questions. Has the peak of progress been reached in the development of machine types for performing essential bridge maintenance and repair operations? Or are there opportunities for the development of entirely new types of machines that will bring about further substantial reductions in the cost of maintaining bridges? Are the railroads as a whole making the most effective use of the many machines and power tools now on the market for use in bridge work?

These and other questions were placed before a number of officers who are responsible for bridge maintenance.

They were asked, first whether mechanization of bridge maintenance and repair gangs has lagged behind that of the track forces. The answers to this question were evenly divided.

Take a "New Look"

One man who feels the bridge forces have lagged behind explains this state of affairs on the basis that, in most instances, the mechanization of track forces has offered greater savings. However, he says we are now taking a "new look" at our bridge repair gangs. They found, he said, that men equipped only with ropes and timber hooks are handling heavy timbers to and from cars as well as on the job. It was discovered also that "too much hand excavation is being done."

Those that expressed the opinion that the bridge forces are lagging in mechanization were asked this further question: What in your opinion needs to be done to get more mechanization out of the bridge forces? The answers to this question developed two lines of thought. One is that some railroads have apparently failed to equip their bridge gangs fully with available types of power tools and equipment.

The other line of thought is that some roads want to achieve greater mechanization of their bridge forces but find that the necessary equipment is not available. Said one maintenance officer: "We are now in the process of mechanizing our bridge forces, but we have run into the problem of securing the proper equipment." This man went on to say, however, that various manufacturers are cooperating in producing the machines that are needed.

This road hopes to have its bridge and building forces fully mechanized by the end of 1957.

Experience of this road naturally points to still another question: Is there a need for new types of equipment for use by the bridge forces?

Several of the men questioned were found to have definite ideas for such equipment. Two of them mentioned the need for a hoist or crane, capable of operating on both the track and on the highways. Several also see the need for spray equipment for painting steel bridges and for applying fireproofing and other coatings to timber decks.

The need for a hydraulic device, or one powered by other means, for extracting bolts, drift bolts and chord bolts in timber bridges is seen by one man. Another would like to have a machine, operating on a mass-production basis, for driving lag screws, track spikes and drift bolts in bridge decks.

Everyone agrees that mechanization of the bridge forces is a good thing, but how are the machines to be utilized to secure the end result —savings in maintenance costs? Here's how one man put it:

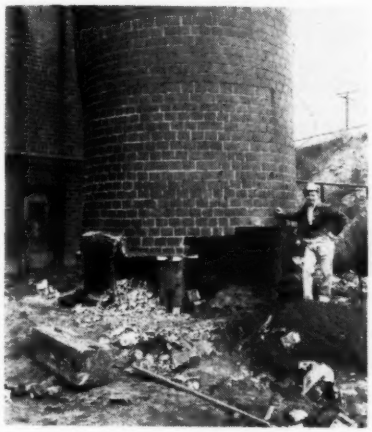
"In order to realize full utilization of machines, bridge repair gangs should be specialized gangs. Basically, mechanization of bridge repair gangs should permit a reduction in the number of men in the gangs, and probably also a reduction in the number of gangs on the system."

New Equipment Types They Say Are Needed

- ▶ **Hoist or crane, with attachments, that will operate on or off track**
- ▶ **Spray outfit for painting steel bridges and applying tie coatings to bridge decks**
- ▶ **Power equipment for extracting drift and chord bolts on timber bridges**
- ▶ **Mass-production machine for driving lag screws, drift bolts and track spikes on bridge decks**

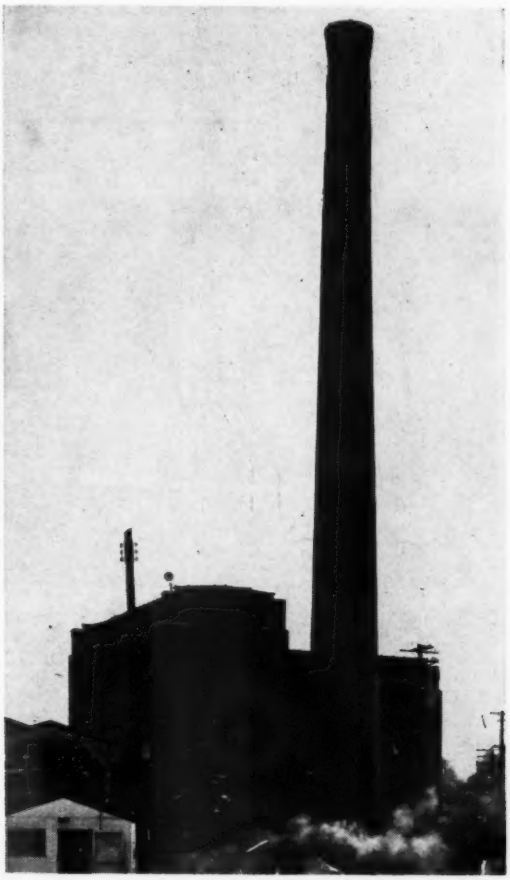
Watching the Death Throes of 125-Ft Brick Stack

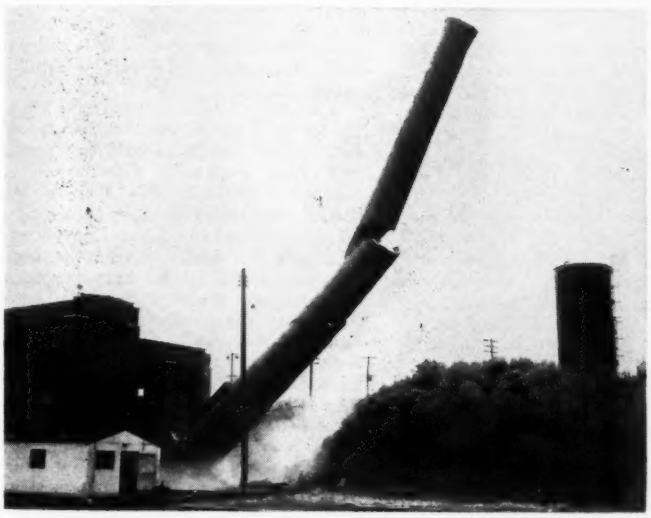
When the P&W's steam-boiler plant at its Rook yards, near Carnegie, Pa., became obsolete, the problem of removing the 125-ft radial brick stack was met by throwing the chimney to the ground as one unit.



1 Contract for demolition was given to the Rust Engineering Company. They underpinned the stack on the side it was to fall, cut away half of the base and placed dynamite in holes drilled in the timbers. Holes were sealed and wiring completed.

2 The charges are detonated and the wood underpinning is blasted away. With half of its solid base support gone, the stack pauses momentarily in its upright position before it begins to topple away from the power plant building.



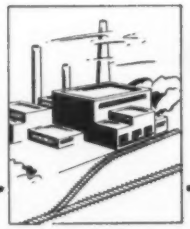


3 Stack is now half-way down, broken at approximately at its half and two-thirds points. Top third lags behind, widening break.

News Briefs in Pictures . . .

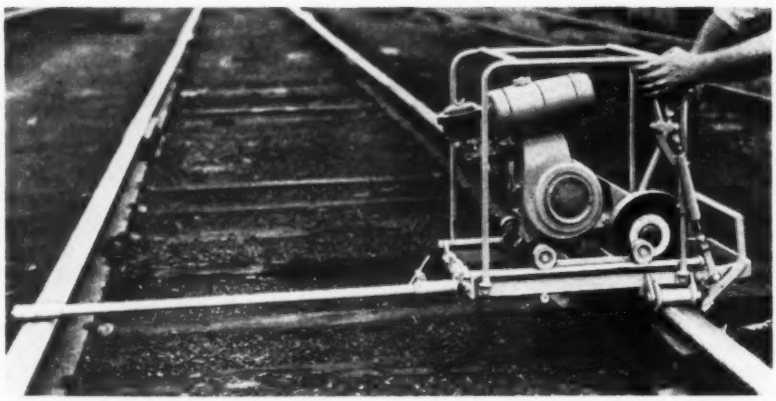
4 Chimney lands in previously prepared dirt-filled trench with resultant splash of the soft top surface.

5 Job is complete with most of the debris disposed of in trench. Force of landing breaks stack into original units.



PRODUCTS OF MANUFACTURERS . . .

. . . new, improved equipment, materials, devices

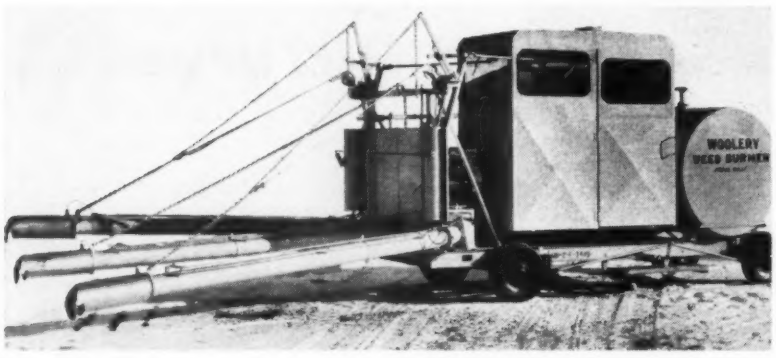


CROSS GRINDER FOR OUT-OF-FACE WORK

A LIGHTWEIGHT cross grinder, designated Model X-60, has been developed for removing overflowed metal at rail joints. It is designed particularly for use, by out-of-face rail-end welding crews, for cross grinding rail ends behind the welding work. The machine is completely insulated. Having a total weight of approximately 130 lb, one man can place the machine in working position or remove it from the track when clearing for traffic.

It is powered by a 4-cycle engine, developing 3.4 hp, which is mounted on compressed-rubber bushings on a rocker base for reducing wear and vibration.

Model X-60 is brought into alinement with the rail joint by a hand-actuated lock-control lever mounted on the upper frame. The latter is so construced that the machine can be overturned in a rolling action for quick emergency removal. The transverse action of both the grinding head and grinding wheel is held in positive alinement by spool-type rollers operating over guide bars. All rollers are equipped with anti-friction bearings and are adjustable for wear. *Railway Trackwork Company, Dept. RTS, 3207 Kensington Ave., Philadelphia 34, Pa.*



WEED BURNER HAS NEW FEATURES

FEATURES which are new in Woolery's model WB-2-F weed burner, which superceeds former model WBF, include an all-steel cab equipped with safety glass windows, automatic transmission with torque converter, and a final drive of chains and sprocket located outside of the wheels for easy adjustment or replacement. The new model is propelled by a 4-cylinder water-cooled engine, and two separate brake systems are provided—a service brake for use while operating the machine and a hand wheel-operated brake for parking and emergency.

As in the previous model, three burners are provided and the two outer ones can be raised, lowered, or swung in and out by controls within the cab. The burners can be used collectively or individually, and electric ignition is provided on each one. A separate 15-hp air-cooled engine is used to drive the blower. This permits the speed of the blower to remain constant while the travel speed of the machine can be varied to suit vegetative conditions on the open track, in yards, or when melting snow at switches. *Woolery Machine Company, Dept. RTS, 29th and Como Ave., S.E., Minneapolis 14, Minn.*

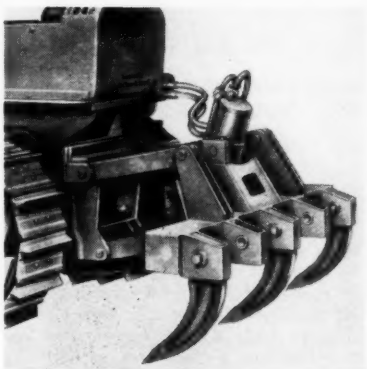
NONFLAMMABLE SOLVENTS

THERE ARE now available non-flammable solvents which, it is claimed, will bite into and remove oil, grease, and dirt without harming delicate metal parts or electrical insulation. Yet, the solvents are said to be safe enough to use in ordinary work areas with conventional ventilating equipment and are available to solve a wide range of special industrial cleaning problems.

Adaptable to vapor degreasing or cleaning by liquid immersion, the solvents will be marketed by the manufacturer under its "Freon" trademark. Three types, all classified technically as "selective solvents," are available in container sizes ranging from 10 to 55 gal. The big advantage of the "Freon" solvents, the company says, is safety, both from a personal exposure and material standpoint. Because they are nonflammable and nonexplosive, they can be used in open shop areas without danger of fire. In addition, from an inhalation toxicity standpoint, they are rated as the safest of the commonly used nonflammable solvents when used in properly-designed equipment which minimizes vapor losses, according to the manufacturer. Most important use proved to date, the manufacturer says, is in cleaning of electrical motors, both new and reconditioned. Biggest problem there, in the past, has been the tendency of cleaning solvents to attack insulation on the motor wiring weakening or removing it sufficiently to cause short-circuits when the motor is placed in operation. Three years of tests indicate that the "Freon" solvents will not soften, craze or dissolve any of the commonly used wiring insulation materials.

Another potential use of the "Freon" solvents, according to the manufacturer, is as an additive to other, more dangerous solvents to decrease the latter's flammability, or to change its solvency or boiling point properties for special applications. In such cases, the manufacturer points out, it is important that the solvent mixture be formulated carefully so that the flammability of the mixture will be reduced to a safe level under all normal operating conditions. Three types of the solvents are now available: "Freon" MF, with a boiling point of about 75 deg.;

"Freon" BF, which boils at 199 deg; and "Freon" TF, which has a boiling point of 118 deg. This range, the company, explains, makes the solvents adaptable to use in many types of mechanical cleaning equipment. Small, portable and inexpensive cleaning tanks, which would not be suitable from a safety standpoint for use with more toxic or flammable solvents, are now being developed to make the "Freon" solvents easy to use in small-scale cleaning operations. *E. I. du Pont de Nemours & Co., Dept. RTS, Wilmington, Del.*



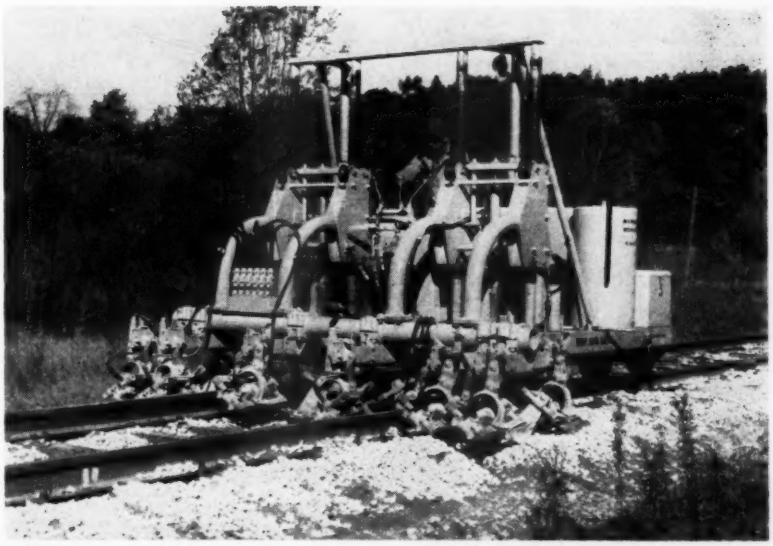
REMOVABLE RIPPER FOR SMALL TRACTOR

AN ATTACHMENT, designated the No. 4 ripper, has been designed for use with 60-in gauge D4 tractors having grouser widths up to 18 in. The new tool is constructed to withstand rugged ripper operations, allowing such materials as shale, hardpan, and rocky or frozen ground to be handled easily. It is hydraulically raised and lowered and is equipped with three alloy-steel teeth having replaceable tips. Two additional teeth may be had on an optional basis.

Because the teeth are removable, the No. 4 ripper has three notable features. It provides the user a choice in the number of teeth—from one to five. The teeth may be inserted backwards so that work can be performed to the edge of vertical walls or banks while the D4 tractor is backing up. Although the attachment provides 15¾ in of ground clearance, which is enough to allow the D4 to climb a 30-deg incline without the teeth striking the ground, additional ground clearance can be obtained when the teeth are not in use by inserting them upside down.

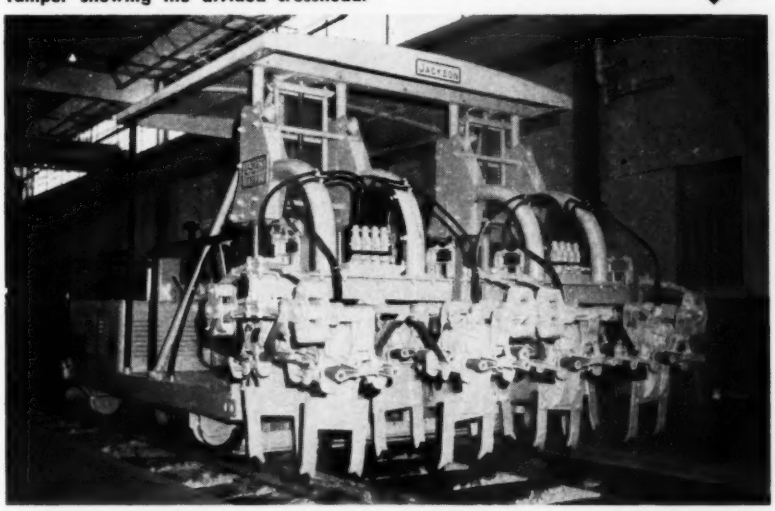
The design of the No. 4 ripper includes parallel linkage which is said to maintain a uniform ripping angle at all penetration depths. This not only produces maximum ripping action but also protects the hydraulic system by reducing cylinder pressures.

Also, the design permits full power of the machine to be absorbed by one tooth at maximum penetration without damage to any part of the ripper. Maximum ground penetration is 12 in, and ripping width is up to 71 in. *Caterpillar Tractor Co., Dept. RTS, Peoria, Ill.*



PILOT MACHINE (without cab) of the latest model of the Jackson Multiple Tamper showing the divided crosshead.

1957 model of the Jackson Track Maintainer now available with either diesel or gas-engine power.



IMPROVEMENTS IN JACKSON TAMPERS

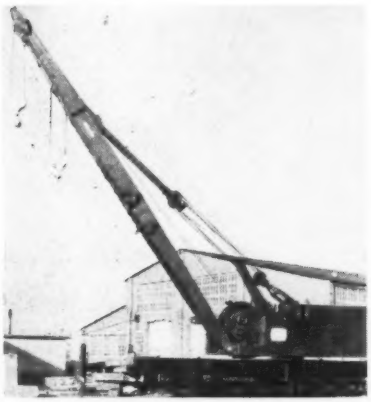
TWO important changes have been made to the Jackson Multiple Tamper. One is a divided crosshead and the other is a radically different hydraulic drive for tamping and traveling, working through a standard truck transmission. Indexing, which is the term used for the operation involved in moving from tie to tie during tamping operations, is much faster because of the new drive, and should produce a significant footage gain over the old model. The new model is made in U.S. standard gage, meter gage and the more common of the wide gages found abroad, and the entire chassis was redesigned to facilitate fabrication to these various gages. Plans also are underway to make the Multiple Tamper available with either gas-engine or diesel-engine power.

Numerous improvements and refinements also have been made to the Jackson Track Maintainer. Most important among those is the fact that users are now offered either a Continental M330 gasoline engine or a Detroit (General Motors) diesel model 3031C. *Jackson Vibrators, Inc., Dept. RTS, Ludington, Mich.*

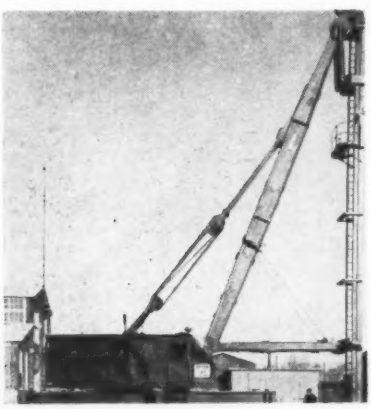
TIES SPACED BY ON-TRACK MACHINE

A LIGHTWEIGHT self-propelled machine, designated the Pullman-Standard tie spacer, has been developed for mechanizing another maintenance-of-way operation. The new machine is designed to perform all tie-spacing functions, including out-of-face spacing where the number of ties per rail is changed; straightening and spacing of ties ahead of the tamping operation in track-surfacing jobs; and the spacing and straightening of new and old ties in heavy tie-renewal operations. As an added feature in the renewal of ties, the manufacturer states that the mechanical

tie spacer also can be utilized to nip and hold ties while spiking. The first unit of this new machine will go into operation early during the 1957 working season. *Pullman-Standard Car Manufacturing Company, Dept. RTS, 221 No. LaSalle Street, Chicago 1.*



STRAIGHT BOOM enables new Orton machine to serve as a wrecker or bridge derrick. It has a 50-ton whip fall-block near upper end.



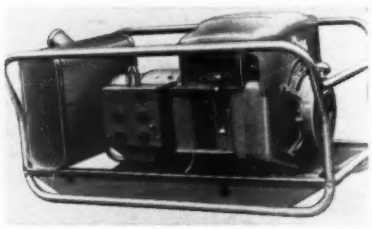
SAME MACHINE can be converted to pile driver by pendent leads. These permit batter in both directions.

COMBINATION WRECKER-PILE DRIVER

A MULTIPLE-PURPOSE diesel wrecker, pile driver and bridge derrick is now available for those roads which cannot justify the purchase of a single-purpose unit. Available in capacities ranging from 75 to 250 tons, this new combination machine originated in a 160-ton unit purchased by the Minneapolis & St. Louis, the design of which was developed with the cooperation of that road's president, A. W. Schroeder; vice president of operations, W. P. Coliton; superintendent mechanical equipment, W. W. Landmesser; chief engineer, S. J. Owens; and bridge engineer, D. I. Kjellman.

This machine is equipped with a straight boom for wrecker purposes, yet it is long enough to be used as a bridge derrick and has a 50-ton whip fall-block for that purpose. Pendent pile-driver leads are furnished, which permit batter in both directions, and these fold automatically when the boom is lowered. The leads can be equipped with an air-operated or a diesel-operated pile hammer.

The machine lowers heavy loads against a torque converter and is constantly under power control. It is equipped with a worm-gear boom hoist so that it is impossible for the boom to lower accidentally. The unit is operated by one man with air-operated controls in a full-vision cab having an outside rear-vision mirror. It is pointed out that this allows full concentration on the load but with constant surveillance of the tail swing. *Orton Crane & Shovel Co., Dept. RTS, 608 So. Dearborn St., Chicago 5.*

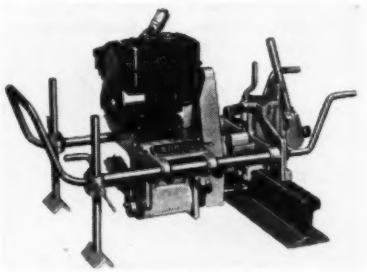


PORTABLE 5,000-WATT D-C POWER PLANT

AN ELECTRIC generating plant, designated Model 5CCK-115P and delivering 5,000-watt d-c current at 115 volts, has been made available as a portable power source for lights, electric tools, and universal motors. It is powered by a two-cylinder gasoline engine of the opposed type having a capacity of 12.9 hp at 2,700 rpm. The generator is direct-connected to the engine for permanent alinement and has a six-outlet receptacle and pilot light. The entire outfit is mounted with a 6-gal fuel tank in a combination guard and carrying frame, but a two-wheel dolly mounting is available at extra cost. It is furnished with a Readi-Pull rope starter. The outfit is said to be light in weight, easy to start, and economical to operate, consuming 1.2 gal of fuel per hour at full-rated load. *D. W. Onan & Sons, Inc., Dept. RTS, 3903 University Ave., S.E., Minneapolis 14, Minn.*

NON-DRYING COATING FOR TRACK WORK

NO-OX-ID "201" has been introduced as a spray coating for the protection of rail joints, turnouts, switches and railroad crossings. It is said to have a non-drying viscous modified-oil consistency and excellent penetrating qualities, and leaves a heavy dark-brown oil film. It has a high-viscosity cylinder-stock oil base with a combination of selected rust inhibitors, wetting agents, and necessary carrier for spraying at normal temperatures. According to the manufacturer, it will pour at 22 deg F, dust and dirt will collect over the coating to add to the protection, and a one-coat application of the material will give outdoor protection for three years. *Dearborn Chemical Company, Dept. RTS, Merchandise Mart Plaza, Chicago 54.*



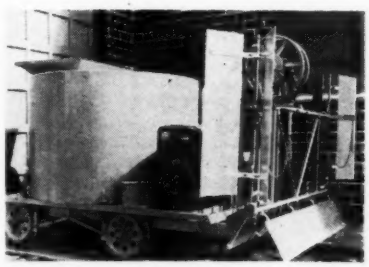
NEW PORTABLE RAIL DRILL

AN AUTOMATIC rail drill is now being offered utilizing automatic power feed that assures the proper feeding rate for various sized drills and rail web thicknesses. Hand feeding is also available when needed. The new drill weighs 165 lbs, and is powered by a 2¾ hp, 4-cycle, air-cooled, 2,800-rpm gasoline engine that drives the drill chuck at a 30-to-1 reduction. A built-in, high-tension flywheel magneto insures quick and easy starting, according to the manufacturer. Drills may be moved ahead in the drill holder to utilize their full length. A rapid-acting clamp enables the operator to remove the drill from the track in a few seconds. *Racine Hydraulics & Machinery, Inc., Dept. MP1—RTS, Racine, Wis.*

32-LB ALUMINUM TRACK JACK

AN ALUMINUM ratchet trip-type track jack to meet the universal demands for lighter weight has recently been introduced. Designated as Model No. 514-A, its frame consists of high-strength aluminum alloy. The frame is topped by a fixed-position bail handle to facilitate ease in carrying. Weighing 32-lb, it maintains the standard required 15-ton capacity. According to the manufacturer, the ratchet mechanism is positive, safe and easy to operate. Supported by a base area of over

66 inches, the Model 514-A has a closed height of 11 in and a lift of five in. *Western Railroad Supply Co., Dept. RTS, 2428 S. Ashland Ave., Chicago 8.*



LARGER TANKS FOR WEED, FIRE CARS

A CAPACITY of 1,000 gal each has now been incorporated in Fairmont's W78 weed-spray car, W73 extinguisher car and W74 tank trailer by the installation of larger tanks. The improved extinguisher car now also has a more powerful engine and a belt-driven centrifugal pump.

When needed, the weed-spray cars and tank trailers can be equipped with self-contained mechanical agitators. The latter are independent units having their own engine for a double-bladed shaft. *Fairmont Railway Motors, Inc., Dept. RTS, Fairmont, Minn.*

BRUSH CUTTER HAS JOINTED ARM

A PACK-TYPE motorized brush cutter, weighing approximately 39 lb, has been made available for increasing brush-cutting production. Designated the Southworth Brush Cutter, this machine has joints in the saw arm which permit high flexibility in movement—up, down, sidewise and saw-blade tilt—and, at the same time, firm footing for the operator while he remains stationary.

A circular 10-in saw blade at the end of the arm is rotated through an enclosed single-V, adjustable belt by a two-cycle gasoline engine which delivers 2.8 hp at 4,000 rpm. It is equipped with a centrifugal clutch which cuts in when the engine is operating at speeds of 1,500 rpm.

The engine is carried on the back by shoulder straps which permit the operator to use one hand for guiding the saw arm and the other for clearing away brush or for raising the saw arm for overhead work. The cutter arm can be disassembled quickly for transporting the outfit in a a car trunk. *Maintenance Equipment Co., Dept. RTS, Railway Exchange Bldg., Chicago 4.*

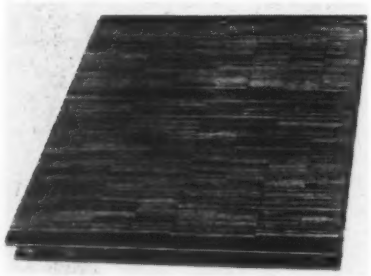
TRACTOR SHOVELS WITH "FOUR-IN-ONE" ATTACHMENT

THE ENTIRE line of the manufacturer's four-wheel drive "Payloader" tractor shovels is now available with Drott "4-in-1" buckets as optional equipment. The multipurpose bucket, previously available only on International-Harvester crawler tractors, can be used as a shovel, clamshell, scraper or bulldozer. As a conventional tractor-shovel bucket it can be used to dig, carry and dump in the usual manner. As a clamshell, the bucket can be used to clean up small piles, pick up material without tractor travel, and to grasp and handle stumps, pipe, timbers, etc. With slight clam-lip opening, the bucket becomes a carry-all scraper that heaploads itself, carries and spreads thin layers of material or dumps completely. With the clamp-lip fully open, it acts as a bulldozer with hydraulic finger-tip blade control to regulate dozing depth and to discharge sticky material. *Frank G. Hough Company, Dept. RTS, 751 Seventh Street, Libertyville, Ill.*

SMALL PLANTS FOR TIMBER TREATING

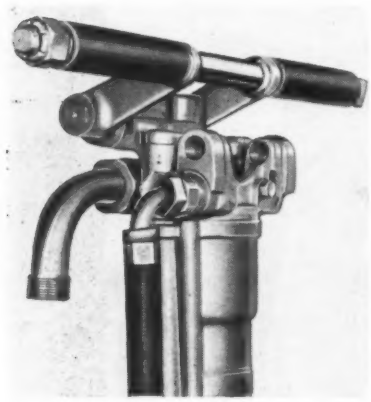
WOOD-PRESERVING plants are now available for use along railroad lines for the pressure treatment of relatively small quantities of bridge ties, switch ties, car decking, construction timber, platform lumber, etc. These small "pony" plants have a per-charge capacity of 3 mbf of lumber or timber and are said to be low in cost but high in efficiency, mobility and versatility. The manufacturer states that the lumber is clean to handle, fire-retardant, highly resistant to termites and decay, paintable and non-corrosive to metal fast-

enings. *Osmose Wood Preserving Company of America, Inc., Dept. RTS, 980 Ellicott St., Buffalo 9, N.Y.*



RUBBER PADS FOR FLOOR PROTECTION

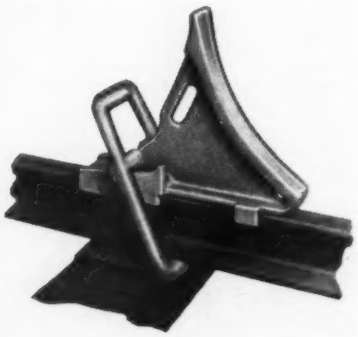
FLOOR PADS, designed to protect lading and floors from damage by absorbing the shock of falling loads, have been introduced under the trade name Flex-O Rubber floor pads. These pads, which may be installed on the floor or recessed into specially built floor pockets, are for use on loading docks and on production and assembly areas. Constructed of steel-channel frames and laminated segments of resilient rubber-reinforced fabric, the pads are said to be built for heavy-duty service and are available in two sizes. *Bumpers, Inc., Dept. RTS, 2534 Detroit Ave., Cleveland 13, Ohio.*



ROCK-DRILL HANDLE DAMPENS VIBRATION

SHOCK-ABSORBING handles are now available for use with LeRoi-Cleveland H-10, H-12, and H-111 hand-held rock drills. Designed to absorb recoil and vibration, the new handle is said to reduce operator fatigue, resulting in more efficient tool operation and higher output at the finish of a day's drilling.

Rubber cushions were incorporated in the mechanism of the new handle for absorbing vibration, and handle adjustment may be made to suit the operator's desired degree of dampening. The new handle is now standard equipment on the three drills listed above, and modification kits are available for equipping former models of these drills with the new handle. *Le Roi Division, Westinghouse Air Brake Company, Dept. RTS, Milwaukee 1, Wis.*



40-LB "FOOL PROOF" PORTABLE CAR STOP

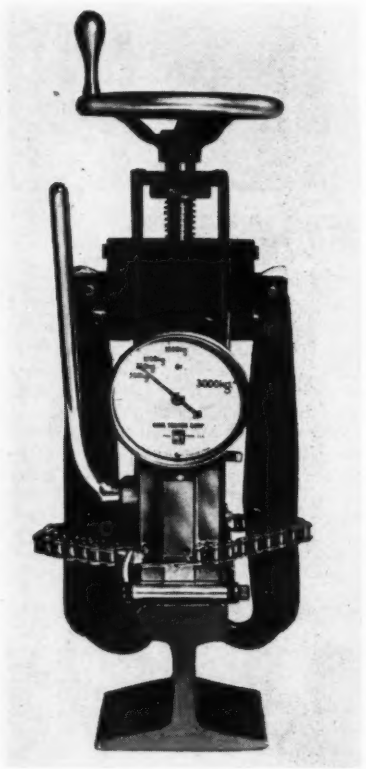
A PORTABLE car stop weighing 40 lb and held to the rail by a split clamping link, composed of two interlocking yokes weighing 10 lb each make up the "Porta-Stop," currently being introduced. Made entirely of heat-treated cast steel, a pair of Porta-Stops (weighing a total of 120 lb) can be installed on a track in a minute by one man, according to the manufacturer, since no tools are needed, no bolts need be tightened. Termed, "simple and foolproof," the Porta-Stop installation consists of fitting together the tongues and grooves of the two identical parts of the link under the base of the rail, and positioning them so the projecting lugs engage the tapered channels on the sides of the stop casting set on the rail head. Porta-Stops come in two sizes, one for rail up to 110 lb, another for 110-lb rail and heavier. *Western Railroad Supply Co., Dept. 2428 S. Ashland Ave., Chicago 8.*

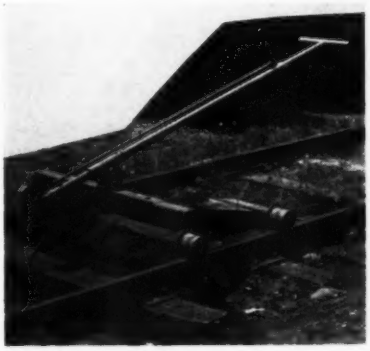
HARDNESS TESTER WITH RAIL ADAPTER

BRINNEL HARDNESS of rails may now be determined in the field in connection with rail end-hardening programs by a portable tester. Weighing less than 30 lb, the tester is designed for operation by one man for making fast accurate Brinnel impressions.

This device is quickly attached and detached from the rail and employs an adaptor for holding the tester in position on the rail to be tested. High-strength alloy-steel arms lock the test head rigidly in position for taking the full thrust of the 3,000-kg load, and they are easily adjusted to permit use of the tester at any point on the rail and with various kinds of joint bars. The instrument is self-centering and locks to the head portion of the rail or joint bars so that no ballast digging is necessary.

The test head employs a hydraulic cylinder to exert pressure on a 10-mm ball. When the load on the ball reaches 3,000 kg, a relief valve opens automatically to relieve the pressure. Applying the load two or three times produces the equivalent of holding a dead load for more than 15 sec as is done with the conventional stationary-type Brinnel testing machines. Results with the portable tester are said to be accurate within the one-per cent prescribed by ASTM specifications. No skill is required of the operator; only reasonable care. *King Tester Corporation, Dept. RTS, 440 No. 13th, Philadelphia 23, Pa.*

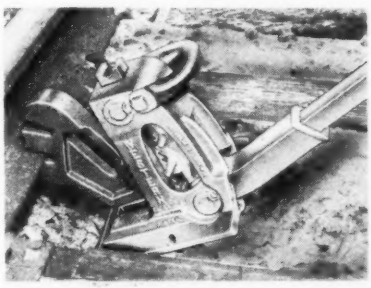




MORE POWER FOR THE NIPPER

SEVERAL improvements have been made to the W83 Tie Nipper, now known as Series B. They include a handle made of stronger stock and 2 ft longer for greater leverage and reach; a wheelbase almost

50 per cent longer for better tracking; and a crossbeam having three mounting locations for the handle assembly. The latter feature permits the use of two handle-and-hook assemblies when greater power is needed. *Fairmont Railway Motors, Inc., Dept. RTS, Fairmont, Minn.*

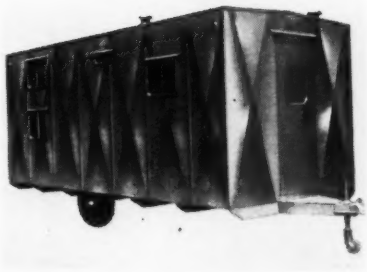


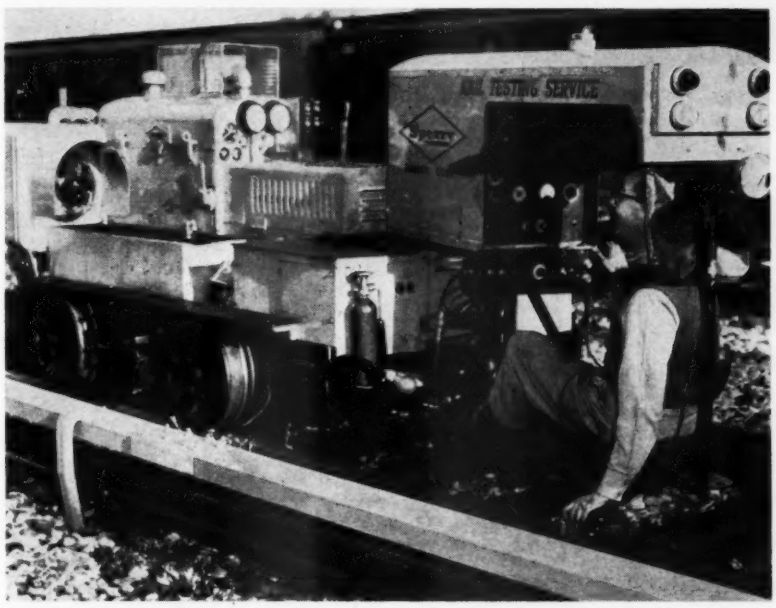
TRACK JACKS MADE INTO TRACK LINERS

TRACK LINING with track jacks is made easier by the use of a new tool designated the Line Aid. The new tool is said to be light in weight and compact in size so that it requires little storage space and can be carried daily in readiness for the expected and unexpected lining jobs. It consists of a one-piece malleable-iron casting having two notches which are said to enable it to be used for lining all weights of rail regardless of ballast conditions. It is designed to work on all sizes of track jacks and it utilizes the full lifting power of the jack for moving instead of raising the rail as frequently occurs when the jack is used alone for track lining. *Western Railroad Supply Company, Dept. RTS, 2400 So. Ashland Ave., Chicago 8.*

NEW TWO-MAN CAMP TRAILER

A NEW model trailer for the railroad industry has been recently made available by the manufacturer. Called the "Economy 21," the new campcar is a complete two-man living unit which can be hauled by ordinary vehicles over roads and highways to the work site. The new trailer has an exterior length of 21 ft, 4 in and an approximate gross weight of 4,340 lb. The car is blanket insulated with metal foil covered fiberglass. The car contains two bunks with innerspring mattresses, a combination electric or ice refrigerator, a cook stove with oven and ventilator hood, an enclosed odor-free dry chemical lavatory, a stall shower, wash basin, double full size hanging wardrobe, storage cabinets, space heater with electric blower, screened windows and doors, screened, crank-type roof ventilator, and a living-dining area. The car can operate at or away from city utilities. The cost of the standard unit of the "Economy 21," is $1,795 with certain optional extras available. *Morrison Railway Supply Company, Dept. RTS, Buffalo 12, N.Y.*





ULTRASONIC TESTER FOR SUBWAY SERVICE

A MODIFIED model of the Sperry ultrasonic detector car for testing rails within the joint-bar limits has been developed for use on the New York Transit Authority Subway System. A number of modifications of the equipment was necessary to meet requirements of the Transit Authority. Grades up to 7 per cent forced a complete change in the propulsion equipment. Certain track structure in use in the subway interferred with the positioning equipment, and these problems had to be overcome also. The elimination of fumes through the use of catalytic mufflers and the substitution of diesel propelling equipment in place of the gasoline-driven equipment were also required. However, the basic ultrasonic testing equipment remains the same. *Sperry Rail Service, Department RTS, Danbury, Connecticut.*

PIGMENTED COATING AS METAL PROTECTOR

A HEAVY-DUTY drying-type pigmented coating has been made available under the trade name No-Ox-Id Aluminum Filler for the protection of metals under severe corrosive atmospheres. It is designed for spray application using the positive piston-type spray equipment. According to the manufacturer this product gives a one-coat application that provides protection for a period of from four to seven years. It is claimed to have these additional features: Good decorative color; dry to the touch overnight and dust free; thoroughly dry after four weeks; excellent adhesion; and good elasticity. Also, it can be stencilled over with a drying oil-type paint.

The manufacturer recommends use of the product for spraying steel bridges, all-metal buildings (inside and out), metal roofs, gutters, eaves, signal cases and signal bridges; as a filler between all metal-to-metal contacts, and metal to wood, ooncrete or brick surfaces; as a filler between uneven surfaces where it serves as

a seal against moisture or corrosive fumes; and on air-conditioning equipment. *Dearborn Chemical Company, Dept. RTS, Merchandise Mart Plaza, Chicago 54.*

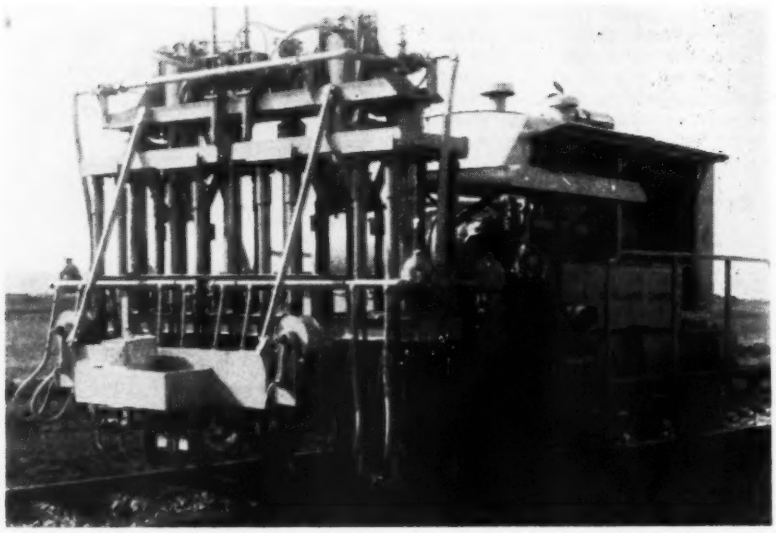
MODEL "D" IS MEDIUM SIZED TOURNATRACTOR

A FAST new rubber-tired Tournatractor, designated Model D, has been made available as a medium-sized companion to the larger 208-hp Model C. The "D" Tournatractor is powered by a four-cylinder 143-hp diesel engine through a five-speed earthmover transmission. The result is a full range of speeds from 2.2 mph for tough dozing to 19.3 mph for job-to-job travel.

The outstanding feature of the new machine is said to be the planetary steering system which permits turns while maintaining full power on all four drive wheels. This system is operated by air-pressure controls triggered by conventional steering levers, and it not only extends the flexibility of the machine's push-power but it also, without special attention by the operator, adjusts the sharpness of turn to the forward speed automatically, thus providing safe, sure control under all conditions. At 2 mph, it is said to allow a sharp-turn radius of about 9 ft while, at about 20 mph, the orbit extends to just under 100 ft.

Accessibility of components and assembly parts has been provided in the design by access plates to speed up servicing and maintenance. It is said that most components can be removed from the "D" without disturbing assembly of other elements. Also, that normal lubrication can be made in 10 min.

Several work tools are available for the "D" Tournatractor and include an 8-ft bulldozer, an 8½-ft snow plow and a double-drum power-control unit. Both the dozer blade and the snow plow mount on the same push arms and use hydraulic control. The mechanical power-control unit, which equips the "D" to handle scraper and other cable-controlled equipment, is rear-mounted. Standard equipment on the "D" includes: Electric starting, head and tail lights, adjustable seat, hand throttle, fuel filter, muffler and all necessary meters and gauges. Cab with or without heater and defrosters is an optional extra. *LeTourneau-Westinghouse Company, Dept. RTS, Peoria, Ill.*

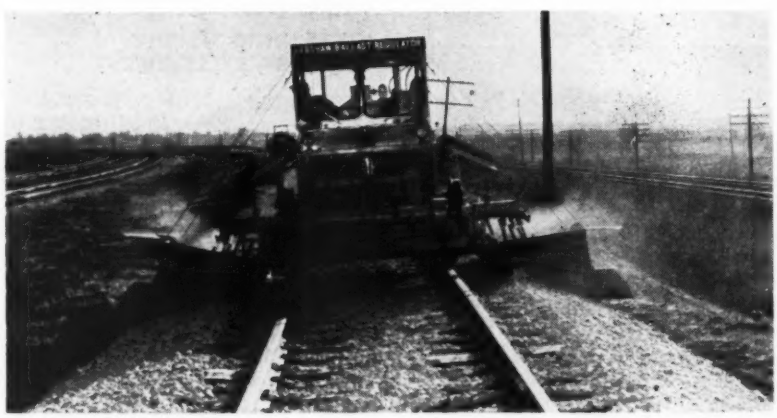


IMPROVED McWILLIAMS MULTIPLE TIE TAMPER

A NEW tamping-gun and cam design has been incorporated as standard equipment on the McWilliams Multiple Tie Tamper. The new tamping gun increases the foot-pound blow from 7.5 to 11.5 while the consumption of air is said to increase only 3.5 cfm. The new cam is designed specifically for spot surfacing and low raises. In combination they are said to produce a more tightly packed ballast pattern under the tie in much less time than was heretofore possible.

The manufacturer states that the machine will now do a quality tamping job on spot surfacing or a raise of one inch at the same speed as was formerly obtained on raises equal to the size of the ballast used and without damage to the ballast. On jobs where the track is being raised an amount equal to the size of the ballast used. it is said the tamper will do one-third more ties tamped per hour than formerly and, at the same time, produce a tighter packed pattern of tamping.

The new gun also is designed with a spring retainer which replaces the former rubber bushing and provides a positive alignment for the tamping bar, as well as enabling the tamping bar to be replaced easier and quicker than was formerly possible. The size of the tamping bar shank also has been increased for additional strength and wear. Gasket seals between the gun and its mounting have been replaced with "0" rings to provide a lifetime seal and eliminate leakage. *Railway Maintenance Corporation, Dept. RTS, P.O. Box 1888, Pittsburgh, Pa.*



NEW WINGS PERMIT TWO-DIRECTION WORK

USE of a new reversible wing assembly, when attached to the Ballast Regulator, now enables ballast to be equalized on shoulders while the machine is traveling in either direction, thereby eliminating turn-arounds. The assembly will fit any Ballast Regulator now in use and can be interchanged easily with any of the present wing-assembly types. The reversible wing, according to the manufacturer, scarifies foul ballast, plows ballast from tie ends to provide drainage, reclaims ballast from the toe line, deweeds and removes vegetation from ballast, regulates and shapes the center lane in double track in either direction, and transfers ballast from shoulder to heads

ZONE FIREPLATE

U.S. PATENT
No. 2,734,827

FIREPLATE protects simulated bridge from tumbleweed fire. This is a typical test conducted on coatings by the SANTA FE Railroad to determine their effectiveness.

NOW!

POSITIVE FIRE PROTECTION *for* Railroad Bridges • Telephone & Telegraph Installations

FIREPLATE provides:

- positive protection against fire loss
- exceptional protection against drying, rotting and deterioration
- vast dollar savings on extensive weed control
- easy application

ENTHUSIASTICALLY ACCEPTED BY RAILROADS COAST-TO-COAST

Now for the first time in the history of railroading, The FIREPLATE Division of The ZONE Company offers complete protection from fire for all types of structures constructed of wood.

For the past 17 years, railroads have been protecting the horizontal surfaces on open deck bridges with the famous LIBBEY-ZONE Process. Now with the development of FIREPLATE, The ZONE Company makes complete protection for wooden trestles and bridges a reality.

The Santa Fe Railroad has played a very important part in the development of FIREPLATE. Through their full scale bridge test, FIREPLATE has proven its value for complete protection against fire. We are proud to announce . . . FIREPLATE HAS PASSED THE SANTA FE FIRE TEST, AND NOW—

THIS AMAZING PROTECTION IS AVAILABLE FOR YOUR RAILROAD'S SAFETY!

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You may secure a personal representative to discuss your "FIRE RETARDANT" program without cost or obligation. Telephone or wire us collect, or write BOB PHILLIPS, GENERAL MANAGER.

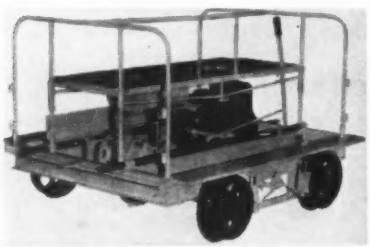
Fireplate Division — The Zone Co.

P.O. Box 789 — FORT WORTH, TEXAS

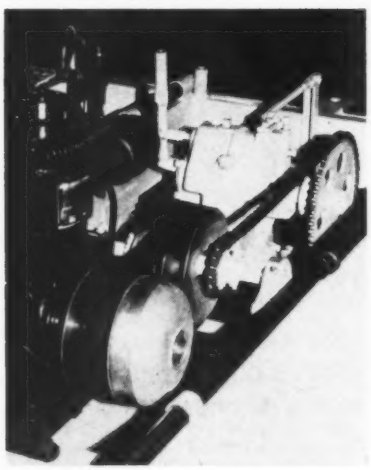
and centers. *Kershaw Manufacturing Company, Dept. RTS, P.O. Box 510, Montgomery, Ala.*

TIE PADS OF SPECIAL FORMULATION PLASTIC

DIMENSIONAL stability is said to be a quality of a recently introduced plastic tie pad. The new product, designated the Gilco Tie Pad, is produced from a special plastic formula among the esters of the thermoplastic compounds. The pads can be fabricated to any size and practical shape for use on curved and tangent track; under insulated joints, railroad crossings and turnouts; on bridges; and through highway crossings. In addition to being dimensionally stable, other advantages cited by the manufacturer are light weight, strength and resistance to high impact, heat, abrasion, brine, diesel and lubricating oils, and weather conditions ranging from the tropics to the arctic. It is said the pad will not split from spiking and is self-sealing around the spikes. *The Gilman Brothers Company, Dept. RTS, Gilman, Conn.*



Model 534-T Section Car



Close-up of Transmission.

MOTOR CAR WITH SPECIAL TRANSMISSION

JUST announced is a new section car, designated Model 534-T, having an automatic "clutch-transmission." The car, powered by an 8¾-hp air-cooled, four-cycle engine, is equipped with a simple transmission system providing torque conversion with smooth, variable-pitch power flow which, it is said, automatically responds to increased power demands by multiplication of engine torque. This drive eliminates the need for a manual clutch, gear shift or tightener pulley.

The belt-driven automatic "clutch-transmission" consists of an engine-mounted centrifugal-driver unit and a torque-actuated countershaft-driven unit which, it is said, smoothly transmits power requirement through a final chain drive to a directional transmission mounted on the rear axle. It is said that jerky clutching cannot occur in the unit and, at idling speeds, the belt automatically adjusts to a zero-tension position.

Clutch activation is controlled entirely through throttle position and the centrifugal forces generated in the driver unit cause the belt to clutch without slippage or grabbing. The unit has been tested on a dynamometer to 380-lb drawbar pull. It is claimed that this type of drive is especially convenient at grade crossings and where frequent starts and stops are encountered while hauling loads. *Northwestern Motor Company, Dept. RTS, Eau Claire, Wis.*

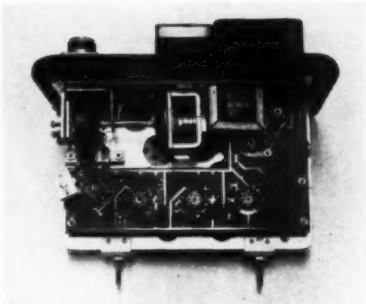
RAIL TONGS FOR GRADALL

HYDRAULICALLY operated rail tongs have now been developed as an attachment for the Gradall machine. The tongs consist of three steel fingers which operate with a scissors action. The touch control of these giant fingers allow the operator to grasp rail sections, lift and control them accurately, and easily butt the rail ends together.

The outstanding feature cited by the manufacturer is the positive control. The rail tongs are rigidly mounted to the end of the boom and the operator has the same positive-control action as the many other attachments, i.e., wrist action, 240-deg rotation, open and close tongs, down pressure, raise and lower, in and out, boom tilt and boom swing. There are no tag lines, swinging free on cables or guiding required. *Gradall Division of the Warner & Swasey Co., Dept. RTS, 5701 Carnegie Ave., Cleveland 3, Ohio.*

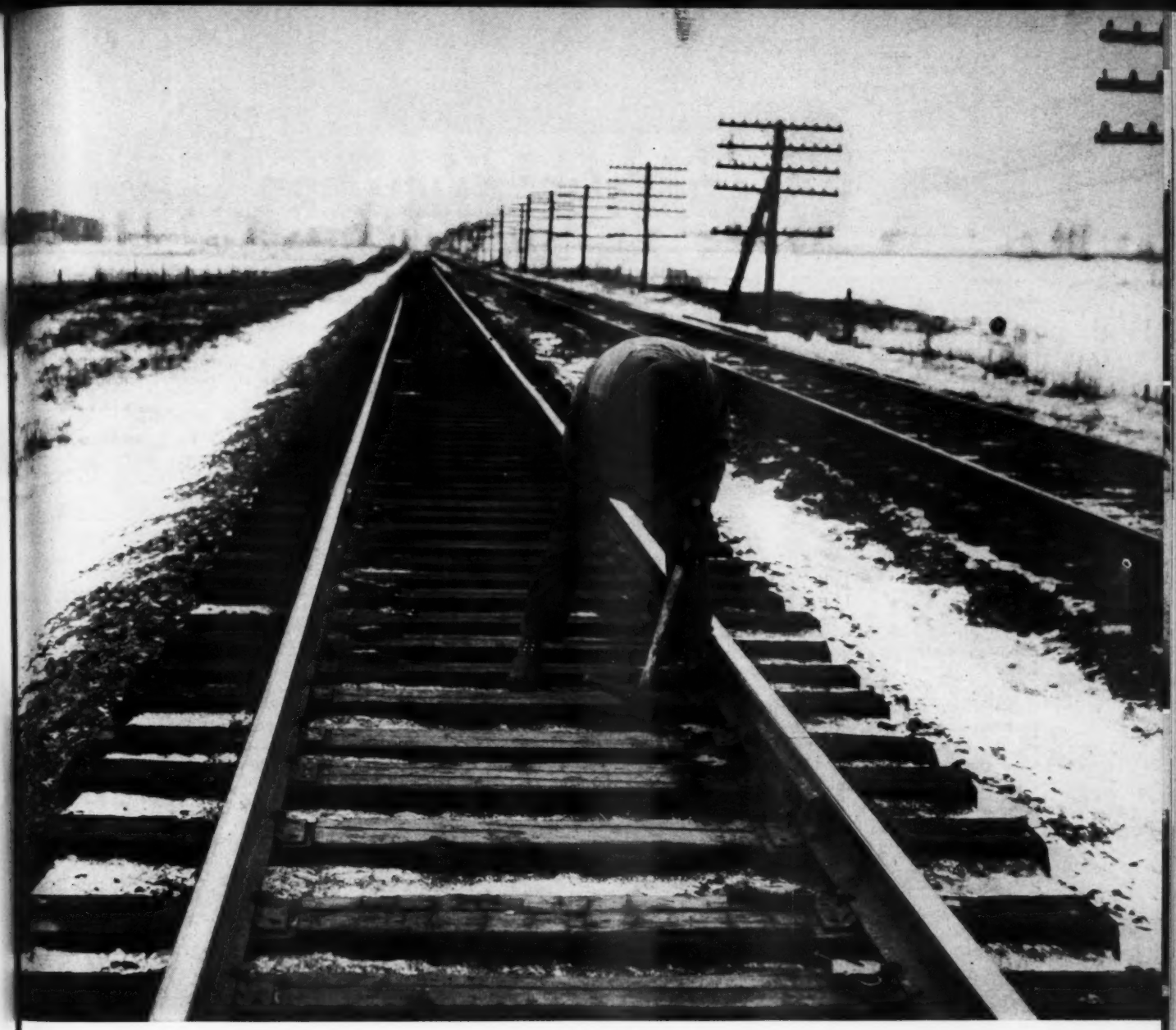
GUARD RAIL FOR SWITCH POINTS

A RUGGED heat-treated switch-point guard rail, designated the Model 755, has been made available for prolonging the life of switch points and stock rails and also for reducing the frequency of derailments at switches in yard operations. The new guard rail is 4 ft 9 in long and is bolted securely to the base plates but does not require any bolts through the stock rail. Heavy side braces are welded to the base plates to give rigidity. The head of the guard rail stands higher than the running rail, the principle of operation being the same as that for self-guarded frogs. The guard rail is heat-treated to give extra long service life but, when it becomes worn through heavy use, it can be replaced independently. *Bethlehem Steel Company, Dept. RTS, Bethlehem, Pa.*



RAIL TESTER HAS IMPROVED CIRCUIT

AN IMPROVEMENT to the interior of the ultrasonic unit of the Sonirail tester makes use of the more recent techniques in the electronics industry. The former terminal-strip type of construction has been replaced by a "printed circuit" wiring board. *Teleweld, Inc., Dept. RTS, 332 S. Michigan Ave., Chicago 4.*



In the same elapsed time . . .

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Both of the men in the photograph above began installing rail anchors at the same starting point, at the same time. Man on the right, installing improved BULLDOG Rail Anchors, outdistanced by better than two to one, the man on the left using the previous model.

This new anchor is easier to install, saves time, frees men for other track duties.

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WHAT'S THE ANSWER?...

. . . a forum on track, bridge, building and water service problems

'Cushion' Rails in Welded Track

Is there a need for installing short "cushion" rails on each side of insulated joints in continuous welded rail territory? Why?

'Great Necessity' Exists

By L. B. CANN, JR.
Division Engineer, Richmond, Fredericksburg & Potomac, Richmond, Va.

Insulated joints are always present in continuous welded rail territory at signal locations, cutouts, crossovers, turnouts, and road crossings, which makes it imperative that consideration be given them in all welded-rail programs. Experience on our railroads has shown that there is a great necessity for short rails to be installed at these insulated joint locations in order to accomplilsh a number of factors.

First, such short rails act as a cushion for the insulation within the insulated joints. A small amount of expansion and contraction is taken up in the conventional joint on the other end of the short rail adjoining the insulated joint. This will help to prevent the breakdown of the insulation that naturally would cause signal failure.

Second, when the insulation has to be placed within the insulated joint the presence of short rails makes it extremely convenient. If the space previously occupied by a short rail is of a different length after the rail is removed, then a second short rail can be cut to fit the gap and easily installed to restore the track.

Third, continuous-welded rails have been known to be laid with rail temperatures as low as 28 deg and as high as 130 deg. During the different seasons of the year, in order to adjust the tension and compression stresses in the rail due to the seasonal temperature changes, the location of the insulated joint seems to be the desirable place to make this adjustment. If it were not for the short rails, it would be necessary to saw the welded rail and often times such cuts are not of sufficient accuracy to allow the bolts in the insulated joints to line up properly. It is of extreme importance that, through the limits of the short rails, the anchorage be on all ties and set close to the ties in order to prevent longitudinal movement of the rail.

'Cushion' Rails Not Needed

By F. L. REES
Division Engineer, Santa Fe, Emporia, Kan.

At the end of 1955 there were some 720 miles of welded rail in service throughout this country. The rails were welded in lengths varying from 663 ft to 2,412 ft, with the most common lengths being from 1,400 to 1,500 ft. The anchorage per 39-ft rail varied from 10 to 48 anchors in almost as many patterns as there were railroads using welded rail.

Of some fifteen railroads questioned concerning their use of "cushion" rails, thirteen answered affirmatively, one negatively, with no reply from one. No doubt the engineering management feels that a "cushion" rail is a necessity, and until enough data are available to convince them that "cushion" rails are not indispensable they will continue to utilize this technique.

Primarily, the introduction of a "cushion" rail or rails adjacent to an insulated joint was for the purpose of leaving only a short space to fill with rail in case of a pull apart. Secondly, it was to reduce stress on the insulation in the insulated joint. Railroads that use the "cushion" rails use various lengths ranging from 15 to 39 ft, depending on the lengths available. With each rolling of rail a certain amount of rail is received in other than 39-ft lengths and the use of "cushion" rails provided an outlet for these short rails.

If an example mile is used which consists of four long rails on each

---

Answers to the following questions are solicited from readers. They should be addressed to the What's the Answer editor, Railway Track and Structures, 79 W. Monroe St., Chicago 3, and reach him at least five (5) weeks in advance of the publication date (the first of the month) of the issue in which they are to appear. An honorarium will be given for each published answer on the basis of its substance and length. Answers will appear with or without the name and title of the author, as may be requested. The editor will also welcome any questions which you may wish to have discussed.

To Be Answered in the June Issue

1. What are the relative advantages and disadvantages of the three most common lengths of rail used in main line track today: 39-ft; 78-ft; and continuous? Explain.

2. To what extent can pre-stressed concrete be used in railway buildings? What are its advantages? Disadvantages, if any? Explain.

3. Some roads, to gain additional weight on the traction wheels of pneumatic-tired work equipment, follow the practice of filling the tires with a liquid. What are the advantages and disadvantages of this practice? What liquid should be used? In what proportion to air? Explain.

4. In the light of the complete dieselization of many roads, it has been suggested that a reduction be made in the design loading of bridges from E72 to E60 or E50. What savings can be realized from such reduction? How much reduction can be safely made? Explain.

5. What methods are most efficient for sterilizing piping, fittings and other component parts of newly installed drinking water systems before they are put to use? What precautions must be taken? Explain.

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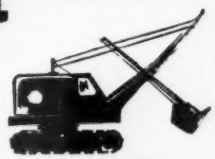
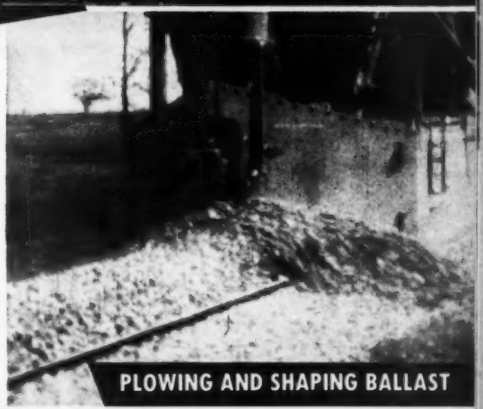
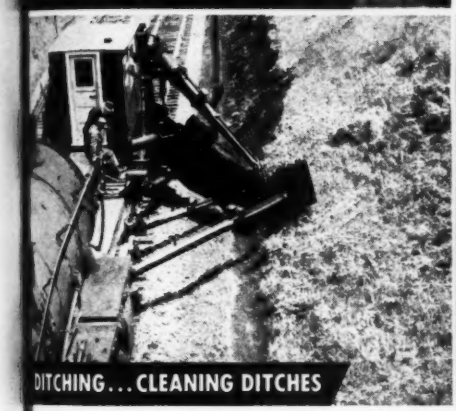
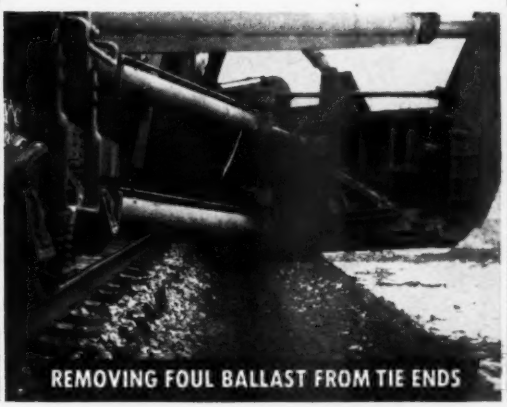
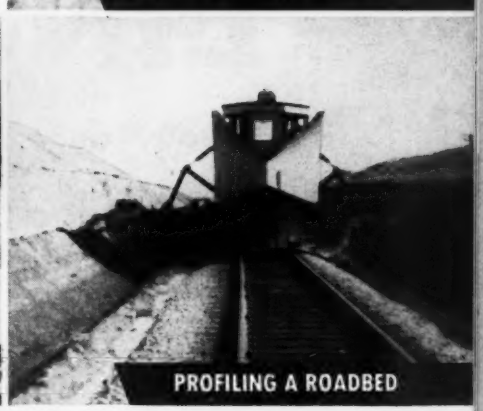

SHOVELS


PLOWING AND SHAPING BALLAST


DITCHING... CLEANING DITCHES


REMOVING FOUL BALLAST FROM TIE ENDS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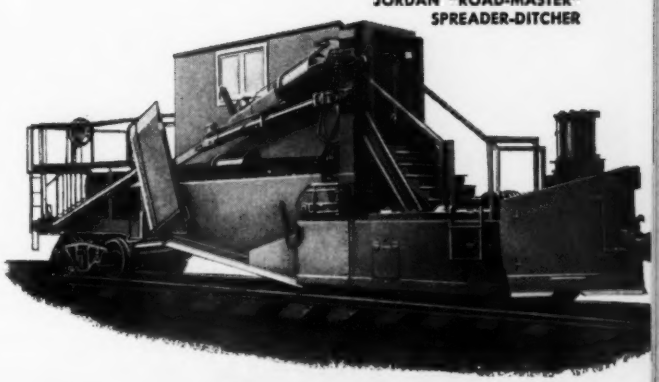

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"DOES THE WORK OF AN ARMY OF MEN"

side, with the insulated joints falling at the juncture of the two middle rails, adding one "cushion" rail provides one additional joint gap on each side with a possible expansion or contraction release point. But, this additional rail increases the number of bolt holes 25 per cent and two "cushion" rails increase the number of bolt holes by 50 per cent. The additional joint bars also decrease the effective length of rail that can be anchored since no anchors can be applied in the area of the joint bars. Using 36-in joint bars, this much effective length is lost as anchoring capacity and, sometimes, this length can be as high as 54 in. One facet to be considered is the advantage of factory drilling when using "cushion" rails adjacent to insulated joints; however, with care and supervision, suitable bolt holes can be produced in the field.

A comparison of two welded rail installations on the same district where the operating and engineering factors are considered equal, and where the "cushion" rail installation antedates the non-cushion rail installation by 22 months, shows the non-cushion installation in as fair a condition as the "cushion" installation.

From my experience with both types of construction, the non-cushion rail type would be preferable. The omission of "cushion" rails decreases the unloading costs since this additional rail does not have to be handled, nor is there need for the handling of additional fastenings. Expansion and contraction has proved to be no problem as the non-cushion rail is performing more satisfactorily than the "cushion" rail installation under comparable weather conditions and temperature differentials, and maintenance of insulated joints is similar with annual renewal of insulation. In an installation of any length there will be various lengths of "cushion" rails and, if an emergency arises where the "cushion" rail must be replaced, the section crew will, no doubt, have to cut a rail to fill the gap as well as drill the bolt holes. Comparing the two installations, identical steps would be followed in an emergency.

Utilization of welded rail has progressed well beyond the experimental stage and only the techniques peculiar to welded rail are the object of refinement, such as fabrication, laying, and maintenance. Witness the number of different anchor patterns as mentioned previously notwithstanding the mathematical theories which have been advanced concerning anchorage. The omission of "cushion" rails is but one more step forward in establishing practical data which will be shared and practiced by more and more railroads. The problem of an outlet for the rails other than 39 ft in length will be attacked this year, and possibly the solution is at hand. Nevertheless, a hard and fast rule of using or not using "cushion" rails will not be immediately forthcoming since each railroad will have to decide for itself which installation is the best for its own use.

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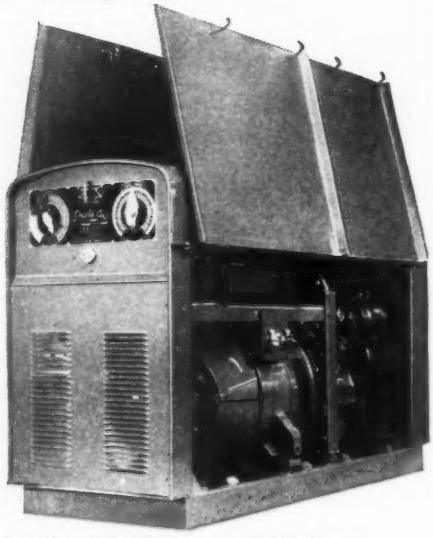

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By C. E. WELLER
Division Engineer, Illinois Central, Waterloo, Iowa

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every solution to a problem must be qualified with the statement that it is based on the experience to date and subject to change.

At the present time, it is the consensus of opinion that short rails should be used on each side of insulated joints. This is possibly a temporary solution to the problem. Everyone is hopeful that, through study and experience, we will be able to adjust or eliminate the movement at the ends of the strings of continuous rail. This movement occurs within from six to eight rail lengths at the ends of the strings of welded rail.

Some people feel that better anchoring is the solution. However, this movement is found to be a problem even in European countries where the rail is secured firmly to each tie. French railroads are experimenting with expansion joints and perhaps this is one of the things we may try. Several of the American railroads are experimenting with new types of fibre material at the insulated joints. Certainly, the use of short rails on each side of the insulated joint will not, and must not, be accepted as the final solution to the problem.

Off-Track Spraying Equipment

To what extent is it practicable to control the growth of brush and trees on the right of way using off-track spraying equipment? What are the essential requirements for such equipment? Explain.

Definite Need Exists

By R. A. Hostetter
General Superintendent Maintenance-of-Way Equipment and Scales, Southern Pacific, Houston, Tex.

We do not have this type equipment, but I have done some planning and thinking along these lines and there is a definite need for it in maintenance of our right of ways, especially for brush accessible by off-track equipment, as well as weeds and other vegetation around gravity switching yards and other large switching areas.

My thinking, so far, along these lines has been to use a skid-mounted tank of approximately 500-gal capacity with a 20-gpm pump with up to 700 psi pressure. This equipment could be mounted on the skids with the tank and used by any of the trucks in the maintenance of way department. This way there would be no necessity of tying up the trucks except during the actual application period. Of course, it would be necessary to equip the skid-mounted sprayer with live hose reels and rewind cranks and provide heavy-duty spray guns with quick acting shutoffs in order to save spray material. Also, two 200-ft lengths of heavy pressure hose would be needed so that the spray operator could leave the truck and go into those areas which are not readily accessible with off-track equipment.

Not Practical

By F. N. Beighley
Roadway Engineer, St. Louis-San Francisco, Springfield, Mo.

I do not believe it is practical to control brush and tree growth on the right of way by use of off-track equipment.

In the first place, brush and trees should be eradicated rather than attempting to control their growth. The growth of brush and trees is much harder to control than that of weeds and grass. You can control the top growth of brush by first clearing the right of way with a bulldozer and then following in successive years with a tractor mower cutting the sprouts that grow from the remaining roots. However, the roots of the plant are not killed and each additional sprout in succeeding years permits the plant crown to increase in size. Thus, the cutting of the sprouts becomes more difficult and more expensive.

It is my thought the best method to use for the control and eradication of brush is by chemicals with on-track work-train equipment—making application in alternate years until the brush has been completely eradicated. If, in succeeding years, seedlings begin to appear, spot treatment application with chemical could be made by use of knapsack sprayers or on-track equipment. The reason for using on-track equipment is that as a general rule the terrain of the right of way is too rough for the use of truck-mounted or other rubber-tired equipment.

Aluminum Vs. Galvanized Gutters

Is the use of aluminum gutters and downspouts justified on railway buildings in spite of their higher initial cost? Why? Explain.

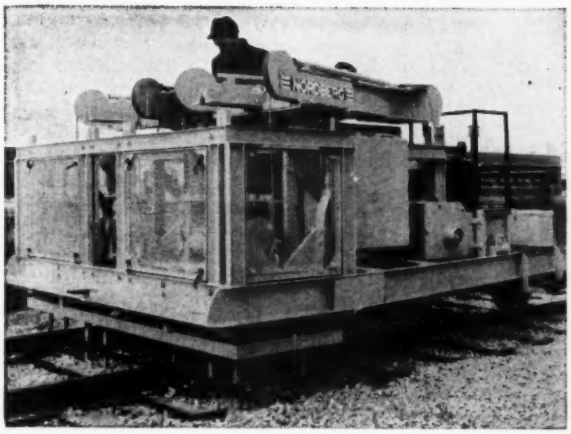
Definitely Justified

By A. H. Ringholm
Manager, Railroad Sales, Kaiser Aluminum & Chemical Sales, Inc., Chicago

Aluminum gutters are very definitely justified, both economically and aesthetically, for almost all types of buildings. This is particularly true with buildings which, like railroad properties, must be erected and maintained at isolated locations. Unrestricted roof drainage upon bare ground, gravel platforms and/or flower beds would necessitate constant watchfulness on the part of the owner against soil erosion and particularly against the flow of water into and around the foundation.

Aluminum is especially well suited for gutters because of the ease of application arising from its exceptional lightness and weight. Almost any man who can handle a hammer and a pair of pliers and who is not thwarted by the problem of providing drainage pitch towards the down-spouting will be able to do a good job installing lightweight, rigid aluminum gutters. The connectors between lengths of gutters are of the convenient slip-joint type thus enabling the installer to assemble long runs of guttering at the

Wisconsin-Powered Tamper Speeds Up Tie-Raising... Automatic 1-Man Operation



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eaves rather than on the ground. Joints can also be made by lapping one length over the other, making sure the direction of water flow is not into the lap joint. All joints should be caulked upon assembly and secured with aluminum sheet metal screws. This feature provides important labor economies through the fewer hands needed to raise an assembled gutter system for final installation.

No soldering is required or recommended. Easily applied elastic caulking compounds containing aluminum pigments provide longer lasting seals with less effort. Aluminum gutters provide further economies and security because of the metal's durability when exposed to the weather. Periodic removal of debris such as leaves, paper, etc., from the gutter should be a regular good housekeeping practice to insure proper functioning of the eaves trough. Enjoying, as it does, the ability to form a non-staining protective oxide-coating, aluminum need not be painted to insure a long service life. On the other hand, aluminum may be painted for decorative purposes at any time, from immediately following the installation to any later date. Normal metal painting practices should be followed if painting is desired. Should mechanical injury of some sort necessitate a repair, the damaged section may be removed for straightening or replacement, even by an amateur without special tools or skill being required in performing the task.

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Painting Oiled Steel Bridges

When painting steel bridges which have previously been oiled, what methods are most satisfactory for removing all traces of oil before the paint is applied? Explain.

Use Grease Paints

By J. P. Dunnagan
Engineer of Bridges (Retired), Southern Pacific, San Francisco

I presume you are referring to what we know as grease paints, such as those manufactured by Dearborn Chemical Company and Texaco Company.

We have used these grease paints in areas exposed to salt air such as is encountered along the California coast, in the Santa Barbara area, and at Coos Bay in Oregon.

After these paints have once been applied, we maintain the structure by re-aplying the same material at periodic intervals and have never had occasion to remove it.

We have used Stoddard Solvent to thin this material for spraying purposes, and I presume that if such paint were to be removed in the future some similar solvent would have to be used. However, as previously mentioned, we have had no experience in removing this material.

Study Corrosion Carefully

By Leo D. Garis
General Bridge Inspector (Retired), Chicago & North Western, Chicago

Corrosion costs the railroads and cities of the United States millions of dollars a month. The best help that I can give is based on a thirty-year battle against corrosion on the Chicago & North Western. Perhaps some of my observations during this time may help as my recommendations would be based on these general observations. With a

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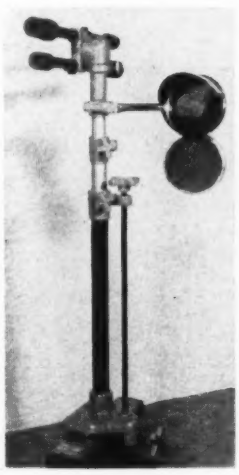
The New Model HL Track Lining Scope



The top telescope looks forward—the lower one, factory-set in precise parallel, looks backward. Vertical cross-hair in each cuts gauge edge of rail when telescopes are tilted. There is no way to go wrong after Model HL is leveled (with the convenient knee-high control).

Tough, heat-treated cast aluminum construction; weight 9 lbs. Twin 6-power achromatic telescopes, adjustable for individual vision. Raises to 5' 4" high on 6" rail. Sturdy Carrying Case furnished. Write for Circular No. 111.

The BRICE HAYES Co., 6710 Northwest Highway, Chicago 31, Illinois

Right-of-way maintenance --simple with an Adams

Why not let one self-propelled machine, with a one-man crew, handle most of your right-of-way maintenance? It's not only possible — it's happening every day on those lines which use a modern Adams motor grader to keep right-of-way in first-class shape.

The Adams is a versatile off-track tool. It goes by most direct route to the next job. Machine crosses tracks, ties, switches, without damage — follows right-of-way embankment, or rides highways to make maximum use of speed. Grader has 8 forward speeds to 25 mph (11 with 3 optional "creeper" gears). It has 4 in reverse — to 13 mph — for fast backup in shuttle grading.

Attachments extend work range

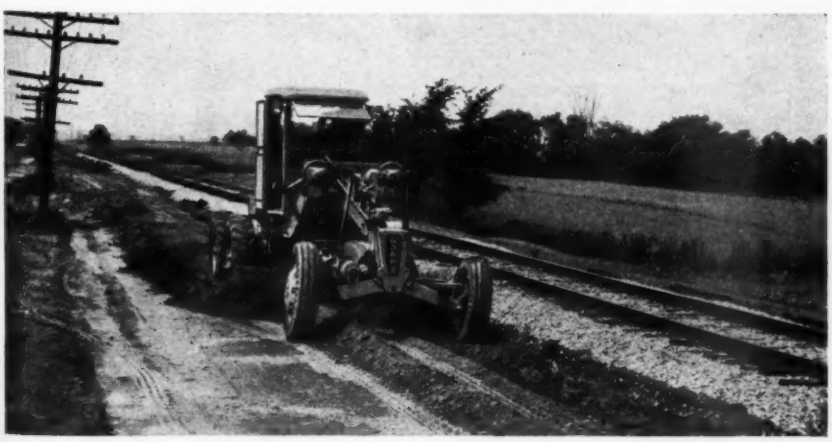
All 6 models in the Adams line are rugged, heavy-duty rigs — with plenty of weight to hold big blade steady — extra horsepower to handle hard-to-work materials. Optional equipment extends grader's range of usefulness. *Scarifier* rips out old asphalt, hard-packed dirt, roots, and stones. *Snow plow* and *wing* keep travel routes clear in winter months. *Dozer blade* pushes debris off right-of-way, backfills around culverts, cleans up spillage in yards.

Handles maintenance on regular schedule

With an Adams, you can plan on a big lift in your year-round right-of-way maintenance from only one man and this one machine. You'll find it's easy to operate on a fixed schedule — detect and fix small troubles before they become major problems. One man, on one grader, handles dozens of RR jobs ... with no extra worry on your part about shovels, draglines, flatcars, gang cars, big work crews.

Use this modern grader to cut and clean ditches, slope banks, widen shoulders, spread ballast, level fills, grade access roads, build grade for sidings, remove brush and weed growth. In your yards, the Adams can clean up around water towers, coal docks, shops, all types of stockpiles.

Ask us to show you a modern, cost-savings Adams grader at work.



Wide 12-ft. blade (on most sizes of Adams grader) holds any cut accurately — because of grader's balanced-weight design and extra horsepower. Wide range of speeds in heavy-duty Adams line (8 forward — 11 with optional "creepers" — 4 in reverse) means power-speed ratio can always be accurately matched to the job. Fine-finishing in tough materials is no problem with an Adams.

A size ADAMS for every need

New POWER-Flow 660 —
190 hp with torque converter..30,200 lbs.

Model 660* — 150 hp diesel..30,050 lbs.

Model 550* — 123 hp diesel..26,370 lbs.

Model 440* — 104 hp diesel..24,080 lbs.

Model 330* — 80 hp diesel..23,020 lbs.

Model 220 — 60 hp G.M. diesel 15,500 lbs.

*Choice of Cummins or General Motors engines. (Weights shown are usual working weights)

TraveLoader — high-speed, heavy-duty, self-propelled, belt-type loader for picking up and loading loose materials into trucks from windrows or stockpiles. 55 hp gasoline, 60 hp G.M. diesel optional 17,500 lbs.

POWER-Flow, Adams—Trademark AG-1340-RR-b

LeTourneau-WESTINGHOUSE Company

RAILROAD SALES DIVISION, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

GEARED TO PROGRESS
RI MEMBER

What's the Answer? (Cont'd)

few exceptions, I have encountered three types of corrosion:

(1) Below the deck on vertical surfaces where steel is protected from the sun, and no foreign corrosive agent is present, we used to use a homemade paint containing linseed oil, lamp black, and a very little varnish. In warm weather much of this 20-year old paint is sticky today and the protection of steel beneath is perfect. On such surfaces, I would forget about oil; where oil has been put on such surfaces, it has done and will do no harm.

(2) Above the deck where members are exposed to the sun but not subject to blast, conditions are different. About fifteen years ago many C&NW bridges were painted with a by-product from an oil company that cost about six cents a gallon. Some of these bridges have not been painted since that time and certainly look bad. However, there is no indication that this by-product oil ever did any harm. Quite the contrary, I feel sure it provided some protection for a few years. However, now the sun and wind have caused its complete disappearance. My thirty years of inspecting steel convinces me that this class of steel corrodes very slowly when not protected by paint.

(3) The third type of corrosion is all below the deck and comes under the heading of severe corrosion and is nearly all caused by salt brine. It attacks the flanges of stringers and floorbeams outside the rails, parts of laterals, lateral plates, gussets and webs of floorbeams. I have a recollection of places where the aforementioned crude oil product was used about fifteen years ago over corroded steel of this type. Thirty days after it was placed, it fell off along with the rust scale. In such locations, oil placed over ten years is not a problem.

At the last American Railway Bridge & Building convention it surely pleased me to see moving pictures of a paint crew washing down a bridge with steam, water and detergents before painting. I think we have been putting expensive paint over surfaces invested with the principal corrosive agent—salt—for too long. Since retirement I have been with the City of Chicago bridge division and they are beginning to make an intelligent attack on brine corrosion. Their newer bridges are open grid floor construction and in places they have open guard rails and railings along trusses. In the spring and fall, at bridges over the river, they wash dirt and salt brine from the floor system with water from a fire hose. To fight salt with enough steam and water gives more promise to future success against corrosion than fancy paints and gadgets.

Generally I am sure that oil is not a corrosive agent. I have observed places where it has protected steel from corrosion and believe there are places where it should be used as it may be the best protection. My recommendation is not to waste much money removing oil when there is a corrosive agent like salt doing millions of dollars worth of damage yearly.

Time Is a Factor

By E. S. Birkenwald
Engineer of Bridges, Southern, Cincinnati, Ohio

When it is desired to paint a steel bridge which has previously been oiled the first thing which must be

TELEWELD
RAIL ANCHOR SHIMS

Don't scrap your old rail anchors! TELEWELD Rail Anchor Shims permit the re-use of any type anchor on new or used rail of any weight.

TELEWELD Wear Shims enable you to re-install loose anchors with assurance that they will stay in place. Shims are available in any thickness desired, for use on new or used rail of the same weight as that on which the anchors were originally used.

TELEWELD Adapter Shims can be used to install large size anchors on small rail, thus reducing inventory requirements for rail anchors to two or three sizes. With proper shims, these anchors can be applied to any weight of rail.

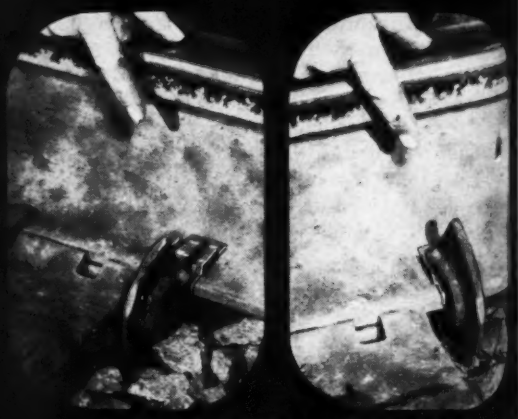
All TELEWELD Rail Anchor Shims are made of high tensile corrosion-resistant steel for long service.

Samples and price list are available on request. Write

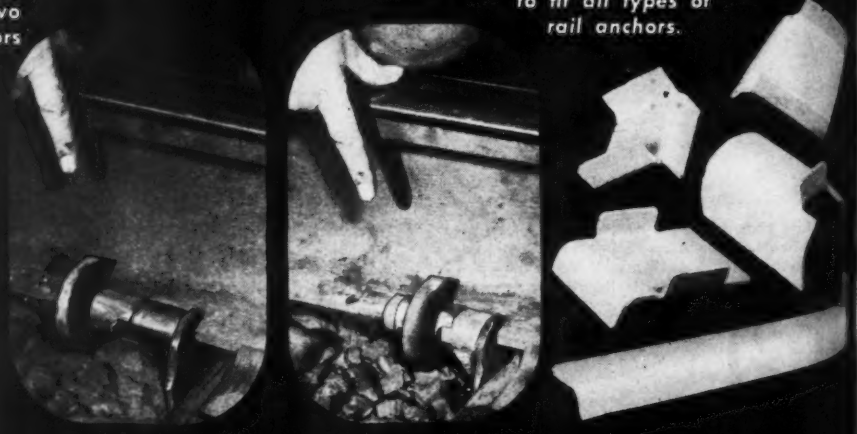
TELEWELD
Inc.
332 So. Michigan Ave.
Chicago 4, Ill.

Above, left: TELEWELD Anchor Shim in position with Fair anchor ready for driving. Right: Anchor is driven back onto rail with TELEWELD Anchor Shim making tight fit.

Below: TELEWELD Anchor Shim in position with Ericson anchor before (left) and after (right) driving for a tight fit to rail.



WEAR SHIMS or ADAPTER SHIMS to fit all types of rail anchors.



CUT WEED CONTROL COSTS WITH A . . . WOOLERY

Model PB-B
WOOLERY WEED BURNER trailer type (shown above) can be towed by motor car. Three burners clear a swath 15 feet wide on first trip and if required can be widened to 25 feet with burners extended on second trip.

A great many millions of dollars have been spent keeping roadbeds clear of weeds—and also for keeping retarders and switches open in the winter.

The Woolery PB-B—a versatile, flexible yard or on-the-line weed burner does these jobs *without fuss—and has been doing them for years!* A good example of what we mean: it destroys all weeds *completely* (due to individually controlled burner arms for raising and lowering as required by ground contour) in a 15-foot swath on one trip and—with burner arms extended on return trip—burns a 25-foot swath! *Yet the PB-B can be taken off track by only two men!*

Small, light, inexpensive—towed by a motor car, the PB-B is the ideal burner for yard work—and in many cases *better* than larger burners for on-the-line work. Can be put on the job *faster!* (Three other Woolery burners in larger sizes available.)

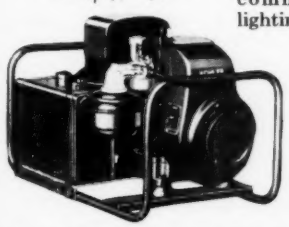
Send for folder #170

WOOLERY MACHINE CO. 2919 Como Ave. S. E., Minneapolis 14, Minn.

KOHLER ELECTRIC PLANTS

On-the-job power anywhere, any time

For Maintenance of Way, portable Kohler models provide compact, reliable power—also for wrecking trains, erection of signal towers, trestles, other construction jobs. Other sizes for end-to-end communications, caboose lighting and refrigeration, work trains, tunnels, electro magnets. Available in gasoline, propane, diesel models—also models for charging 6, 12, 32 and 112 volt batteries. Write for folder 5-C.



Model 2.5M25, *2500 watts, 115 volt AC. Manual starting. Other sizes, 500 watts to 50 KW.*

Kohler Co., Kohler, Wisconsin. Established 1873

KOHLER OF KOHLER

PLUMBING FIXTURES • HEATING EQUIPMENT
ELECTRIC PLANTS • AIR-COOLED ENGINES • PRECISION CONTROLS

SIMPLEX JACKS

First Choice for Railroad Use!

POLE PULLING AND STRAIGHTENING JACKS

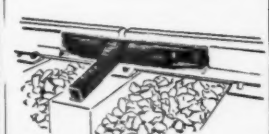
5 and 15 ton models for all pole sizes. Base pivots. Also can be used for guy wire tightening and pulling underground cables.

TRACK JACKS
(Trip Type)

Malleable or aluminum housings. Large grooved toe areas. Trip on both sides. 12 models.

HYDRAULIC JACKS

Capacities of 3-100 tons. 8 models. Also self-contained and remote controlled hydraulic rams and pullers.



RAIL EXPANDERS

Permit crossing and switch lining, rail spreading and pulling without service interruption.

OTHER SIMPLEX RAILROAD JACKS

- Tie Removers and Replacers
- Tie Spacers
- Cable Reel Jacks
- Pipe Pushers
- Push-Pull Jacks for Piling
- Ratchet Lowering and Standard Speed Bridge Jacks
- Jack Supports

Write for Details in Bulletin RR55

TEMPLETON, KENLY & CO.
2543 Gardner Road
Broadview, Illinois

WORLD'S LARGEST MFGRS. OF INDUSTRIAL MECHANICAL AND HYDRAULIC JACKS

SIMPLEX
RE-MO-TROL UTIL-A-TROL **JACKS** JENNY ROL-TOE

What's the Answer? (Cont'd)

considered is the length of time that has elapsed since the oil was last applied. If the oil has not lost its volatile matter and has not become gummy or hardened from age, it will be necesary to use a chemical solvent to remove the oil. The steel should then be steam cleaned, utilizing a detergent, so that all of the residue is removed and bare steel is obtained for priming with a paint.

If, however, the oil has reached sufficient age to form a relatively hardened surface, it is then possible to use mechanical tools to remove the bulk of the oil residue. In either event some hand scraping may be necessary. Steam cleaning, utilizing a detergent, is also required—in either case—to prepare the steel surfaces for priming with paint.

The kind of chemical solvent needed will depend upon the type of oil used.

The older the oil is on steel surfaces, the easier and cheaper it should be to remove. On the other hand, it should not have been allowed to age to the point where corrosion can start so that sand blasting will be required.

Preparation for painting steel bridges which have been greased requires similar consideration.

Short Partitions for Offices

What are the advantages and disadvantages of office partitions less than ceiling height? What types of materials are best suited for such partitions? Explain.

Use Somewhat Limited

By J. W. Hayes
Architect, Great Northern, St. Paul, Minn.

The most important advantage of partitions of less than ceiling height is found where employees are located in a large office area and are called upon to meet persons from outside your firm. Meetings held in a small enclosure are more private and do not disturb the entire office force. In areas where many people work, a large amount of lost time results from conversations between office personnel. This is held to the minimum if small enclosures are placed around each person. These partitions are easily moved by unskilled labor and, when moved, do not necessitate any major alterations to the heating, lighting or air conditioning systems in the area. Moving these partitions does not require redecorating, as is often the case when permanent partitions are moved. Offices of less than ceiling height can be very small without giving the employee the feeling of being closed in.

The major disadvantage is that of sound control. Even with acoustical sidewalls we find that they cannot be used anywhere where confidential work is carried out. For this reason their use is somewhat limited.

The material which we have found most satisfactory has been a sandwich panel made of two pieces of steel with fiberglass between. This extends to 39 in above the floor. Above this steel we use a variety of materials some of which are clear glass, obscure glass, cork, acoustical board, blackboard, etc. The most popular partition used by us to date has been 68 in high, with the only disadvantage being that people can look over the top. To remedy this we have very recently gone to an 84-in high partition. This partition is made of similar materials except the upper 12 in is steel, similar to the lower 39-in panel. This 12-in band adds stability to the partition as it is continuous around the partition and acts as a lintel over the doors. These partitions are valuable because in this progressive period it would be economically impossible to build permanent partitions and move them about as required.

Advantages Are Many

By A. A. Melius
Architect, Northern Pacific,
St. Paul, Minn.

The disadvantages are few. We have found that the low partitions, 7 ft high or less, are only semi-private. Sound travels over the partitions and any normal speaking is heard from either side. However, acoustical tile applied to the ceiling overcomes most objections.

I am assuming that prefabricated partitions are being used. The advantages are many:

Glass where you want it for relighting; with or without doors; all hardware in place, stock sizes; and flexibility. You get raceways for wiring in the base, chair rails, vertical members or cornice and a base that is adjustable for uneven floors. They can be easily erected or taken down, altered with interchangeable units, without dust or debris, and with a minimum of disturbance to normal routines in an occupied office. These narrow partitions save floor space and they are 100 per cent reusable after taking down.

Metal partitions have all the advantages listed above and meet most requirements. Conditions and locations vary so much that various materials may be used. If the partitions are to be moved, I prefer steel for its strength and durability. For those of a more permanent nature, asbestos-cement board, hardboard or plywood may be used.

Fine If Privacy Not Essential

By R. E. Lilliston
Architect, Kansas City Southern,
Kansas City, Mo.

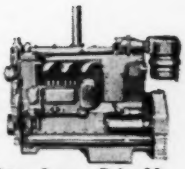
The question is specific only in referring to office partitions with no mention made of various types, as temporary or permanent partitions. I assume permanent partitions are the type that you have in mind.

A large area can be divided by this type of partition and still retain the character and unity of the area as a whole. When an area is divided by this method, one is conscious of different functions being performed in separate areas and yet is aware of the unit as a whole. This feeling of openness is desirable in most instances. Many times no extra consideration need be given small areas enclosed by less-than-ceiling-height partitions when designing heating, air-conditioning or lighting systems. There is usually a cost advantage in the installation of a mechanical system when no special consideration must be accounted for. The initial cost of a less-than-full-height partition of similar or near similar material is less. Likewise there is less surface area to maintain.

If complete privacy is desired, less-than-ceiling-height partitions probably should not be considered. Even with modern methods of sound control there will be interference and the feeling of privacy will be lacking.

MODERN HEAVY-DUTY CAT* DIESELS FOR RAILROAD USE

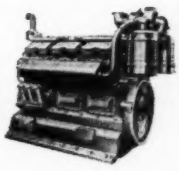
NEW D318 (Series G) Turbocharged **175 HP†**



Smaller, Lighter, Lower Priced!

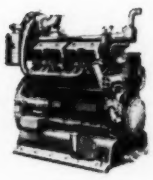
Keeping in line with Caterpillar's continued diesel leadership are these new Series G engines. They are designed for use in installations where space is at a premium. Both are small, light and low-priced; yet they deliver dependable power with the renowned Caterpillar durability. Both are available naturally aspirated (shown here) or turbocharged. Choice of air or electric starting system.

D397 with Turbocharger **650 HP†**



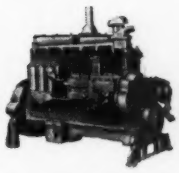
Also a Roots blown, naturally aspirated or spark-ignition engine; electric set or torque converter power unit. Air, electric or gasoline starting.

D375 with Turbocharger **430 HP†**



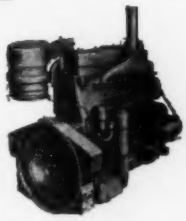
Also a Roots blown, naturally aspirated or spark-ignition engine; electric set or torque converter power unit. Air, electric or gasoline starting.

D342 Naturally Aspirated **210 HP†**

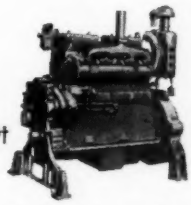


Also available as an electric set. Choice of air, electric or gasoline starting system.

NEW D315 (Series G) Turbocharged **115 HP†**

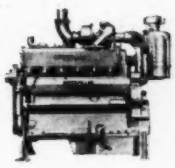


D339 Naturally Aspirated **140 HP†**



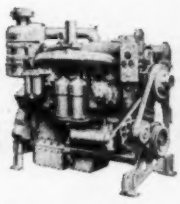
Choice of air, electric or gasoline starting system.

D337 with Turbocharger **310 HP†**

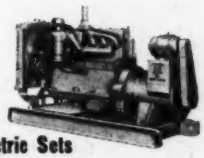


Also available as an electric set or torque converter power unit. Choice of air, electric or gasoline starting system.

D326 Naturally Aspirated **200 HP†**



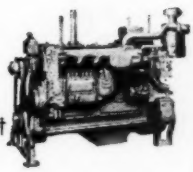
Also available as an electric set or torque converter power unit. Choice of air, electric or gasoline starting system.



Electric Sets

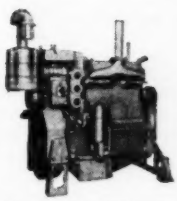
Dependable electric power, featuring the new Cat Generator, available in standard voltages, 60-cycle, in the following KW sizes: 30, 40, 60, 100, 150, 165, 200, 225, 250, 315, 350. Also available as 50-cycle and DC units.

D318 Naturally Aspirated **137 HP†**



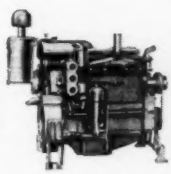
Also available as an electric set or torque converter power unit. Choice of air, electric or gasoline starting system.

D315 Naturally Aspirated **91 HP†**

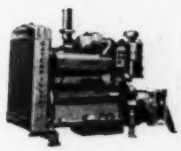


Also available as an electric set or torque converter power unit. Choice of air, electric or gasoline starting system.

D311 Naturally Aspirated **65 HP†**



Also available as an electric set. Choice of air, electric or gasoline starting system.



Torque Converter Power Units

Many different arrangements are available for each of six Cat Engines. Wide choice of power units and wide choice of output shafts.

†maximum output capacity

In its quarter century of diesel leadership, Caterpillar research has been responsible for advance after advance in the efficiency of these engines. The units you see here incorporate the latest diesel developments – a modern heavy-duty line that offers you hundreds of various power packages to meet your requirements for locomotives, rail cars, work cranes, excavators and many other types of on-track and off-track equipment. Leading manufacturers can supply them in the locomotives and equipment they build. Cat Engines are available up to 650 HP (maximum output capacity) and Electric Sets up to 350 KW (continuous duty). For complete information about them, see your Caterpillar Dealer.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

THE MONTH'S NEWS...

. . . among railway men—the associations—the suppliers

Changes in Railway Personnel

General

V. H. Freygang, an engineer through training and experience, has been promoted to assistant superintendent of the Buffalo division of the Baltimore & Ohio with headquarters at Punxsutawney, Pa.

Engineering

Richard S. Bennett has been appointed assistant engineer of bridges on the Southern Pacific, with headquarters at San Francisco. **Joseph F. Hoss, Jr.** has been named engineer of structural design at San Francisco, succeeding Mr. Bennett.

William E. Billingsley, until recently in the service of the U.S. Army, has been appointed assistant division engineer on the Seaboard Air Line, with headquarters at Atlanta, Ga.

Karl E. Bomar, whose promotion to assistant division engineer on the Chesapeake & Ohio at Huntington, W. Va., was recently announced (*RT&S*, Jan., p. 54), was born May 31, 1917, at Galvez, La. He attended Louisiana State University and the Dunsmore Business College and on May 7, 1936, joined the C&O as a track laborer. He subsequently served as stenographer-clerk at Clifton Forge, Va., and in February 1951 became a rodman at Richmond, Va. In February 1942 he was named assistant cost engineer, leaving the railroad on March 12, 1943, to serve with the armed forces. He returned to the C&O on April 1, 1946, as assistant cost engineer at Richmond, and in July of the same year was transferred to Clifton Forge. In October 1948 he was named assistant supervisor of track at Clifton Forge—the position he held at the time of his recent promotion.

John N. Cetinich, whose promotion to senior assistant division engineer on the Southern Pacific at Los Angeles, Cal., was recently anounced (RT&S, Dec., p. 82), was born June 20, 1926, at Sacramento, Cal. He graduated from the University of California at Berkeley in 1951. He began his railroad career in 1945 when he joined the SP as a rodman. He was promoted to instrumentman in March of the same year—two months later he joined the U. S. Army Air Corps. Upon his discharge from the service and completion of his college education, Mr. Cetinich rejoined the SP as an assistant engineer. On April 1, 1953 he was named general track foreman at Roseville, Cal., transferring in that capacity to Sacramento the following year. He was promoted to assistant division engineer at Portland, Ore., on July 16, 1955, and, in April 1956 was transferred to Indio, Cal—the position he held at the time of his recent promotion.

Wm. J. Hedley, assistant chief engineer of the Wabash, has been promoted to chief engineer, with headquarters as before at St. Louis, succeeding **J. C. Bousfield,** who has retired.

H. L. Thompson, roadmaster on the Canadian Pacific at Prince Albert, Sask., has been promoted to division engineer at Edmonton, Alta.

T. B. Reifsnyder, assistant cost engineer on the Chesapeake & Ohio at Saginaw, Mich., has been named allotment commissioner at Huntington, W. Va.

E. E. Gordon, roadmaster on the Bangor & Aroostook has been promoted to assistant to the chief engineer with headquarters at Houlton, Me.

W. J. Holtman, assistant trainmaster on the Denver & Rio Grande Western at Grand Junction, Colo., has been promoted to assistant to the chief engineer at Denver.

C. E. Jackman, engineer maintenance of way on the Baltimore & Ohio at Baltimore, Md., has been promoted to assistant chief engineer maintenance. **J. A. Caywood,** division engineer, Baltimore division, East End, succeeds Mr. Jackman. **J. W. Brent,** division engineer, Western subdivision, at Pittsburgh, Pa., has been transferred to Akron, Ohio, succeeding **J. T. Collinson,** who has been transferred to the Baltimore division succeeding Mr. Caywood. **F. L. Thompson** has been named division engineer at Newark, Ohio, succeeding **W. G. Stagge,** who has been transferred to Pittsburgh, succeeding Mr. Brent.

Theodore H. Kruttschnitt, Jr., whose promotion to public projects engineer on the Southern Pacific at San Francisco was recently announced (RT&S, Dec., p. 82), was born June 30, 1914, at Tucson, Ariz. He attended the University of Arizona and on July 2, 1934, entered railway service as a water service helper on the SP at Tucson. In January of the following year he joined the road's engineering department as a rodman, working in this and other capacities until May 1941 when, as an assistant engineer, he was transferred to the coast division at San Francisco. In June 1945 he was promoted to assistant division engineer at San Francisco and in May 1951 was named senior assistant division engineer—the position he held at the time of his recent promotion.

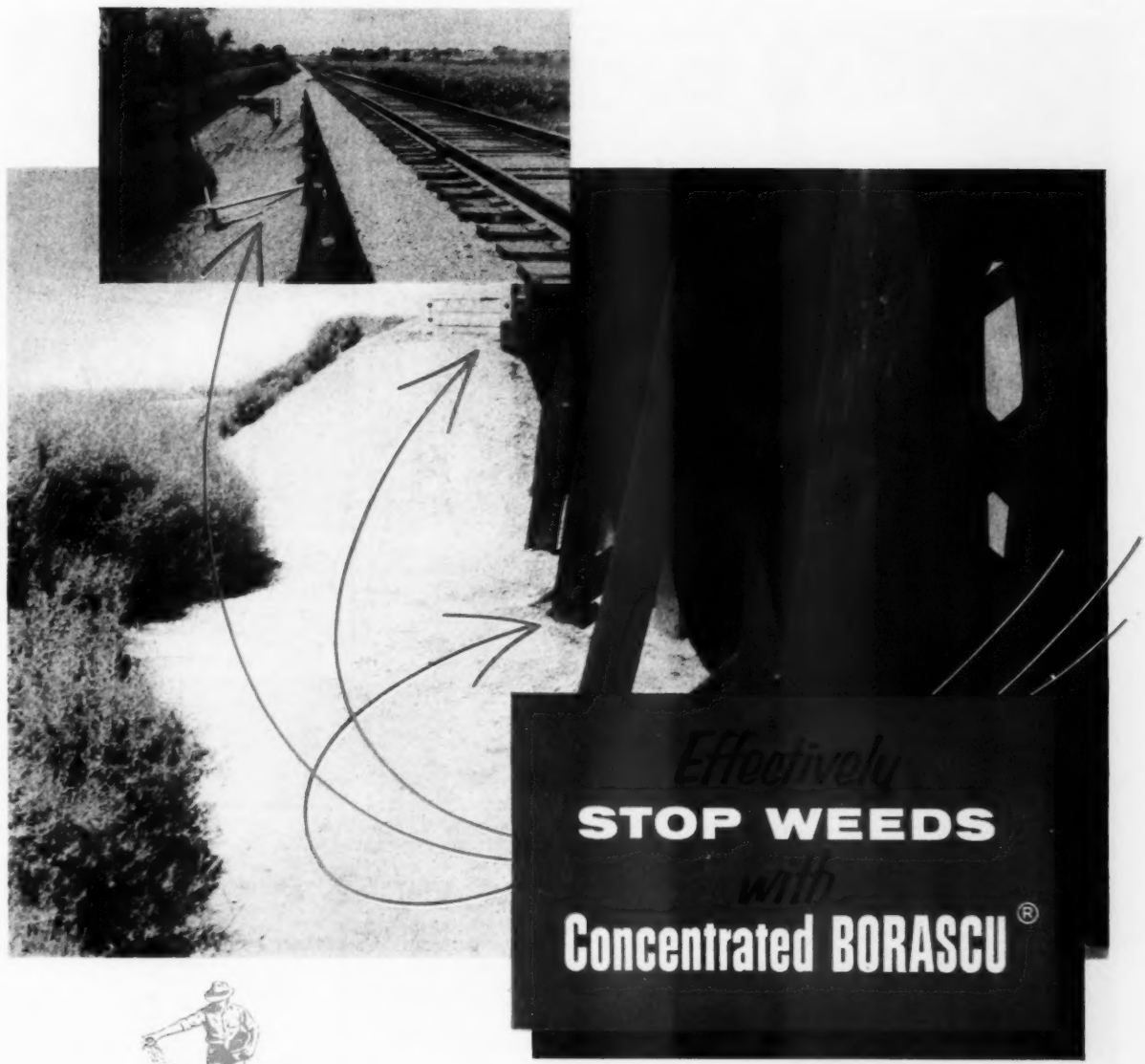
Herbert F. Longhelt, whose promotion to assistant to division engineer on the Illinois Central at New Orleans, La., was recently announced (RT&S, Dec., p. 80), was born September 21, 1923, at Chicago Heights, Ill. He graduated from the University of Illinois in 1947 and on August 7th of that year joined the IC as a junior engineering aide at Carbondale, Ill. He was promoted to assistant supervisor of track at Carbondale in October 1949, and in March 1951 was named supervisor of track at that location. In February 1954 he was transferred to Bloomington, Ind.—the position he held at the time of his recent promotion.

William S. Autrey, whose promotion to regional engineer on the Santa Fe at Los Angeles was recently announced (*RT&S*, Dec., p. 80), was born April 9, 1925, at Jonesboro, Ark. Upon graduation from the University of Illinois in 1947 he entered the service of the Santa Fe as a roadway assistant at Amarillo, Tex. In May 1949 he was named assistant roadmaster at Amarillo and in January

William S. Autrey

1950 was transferred to Temple, Tex. In June 1951 he was promoted to roadmaster at Brownwood, Tex., and transferred to Temple in January 1953. In June 1955 he was promoted to division engineer at Temple—the position he held at the time of his recent promotion.

H. S. Ross, assistant division engineer on the Baltimore & Ohio at Washington, Ind., has been promoted to division



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Railway Personnel (Cont'd)

engineer of the Buffalo division at East Salamanca, N.Y. Mr. Ross succeeds **J. W. Brent,** who has been transferred to the Western subdivision of the Pittsburgh division at Pittsburgh, Pa., succeeding **F. A. Ernst,** deceased.

John G. Fry, whose promotion to regional engineer on the Santa Fe at Los Angeles, Cal., was recently announced (RT&S, Dec., p. 80), was born October 18, 1913 at Kansas City, Mo. He attended the University of Notre Dame and

John G. Fry

entered railroad service in October 1937 as a rodman on the Santa Fe at Newton, Kan. After serving as chainman and transitman at Newton, Mr. Fry was named transportation inspector at Chanute, Kan., in March 1943. He was transferred to Arkansas City, Kan., in December 1945 and in June 1949 was appointed roadmaster at that location. In February 1950 he was promoted to division engineer at Temple, Tex. In October of the same year he was named district engineer at Topeka, Kan., and in March 1951 was named division engineer at Chillicothe, Ill.—the position he held at the time of his recent promotion.

Track

John Holm, section foreman for the 47-mile long railroad owned and operated by the Reserve Mining Company, Duluth, Minn., has been promoted to roadmaster with headquarters at Babbitt, Minn.

J. N. Barnes, has been named roadmaster on the Denver & Rio Grande Western at Kremmling, Colo. and **J. N. Emmons** has been named track supervisor at Grand Junction, Colo., succeeding **John L. Hodgkinson,** who has been promoted to roadmaster with headquarters at Denver.

R. B. Slack, roadmaster on the Canadian National at Nashwaak, N. B. has retired, after 42 years of service.

J. M. Patterson, junior engineer on the Canadian Pacific at Regina, Sask., has been named roadmaster at Prince Albert, Sask., succeeding **H. L. Thompson,** whose promotion to division engineer at Edmonton, Alta. is noted elsewhere in these columns.

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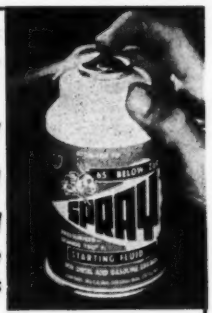

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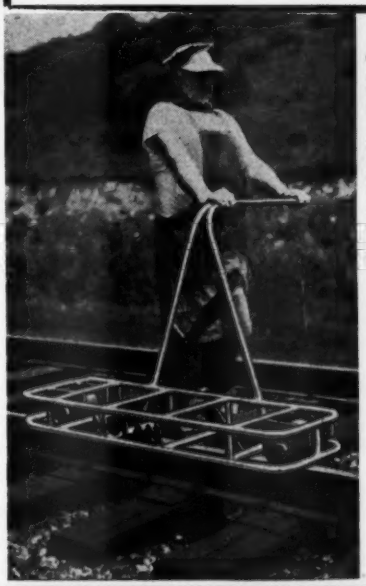

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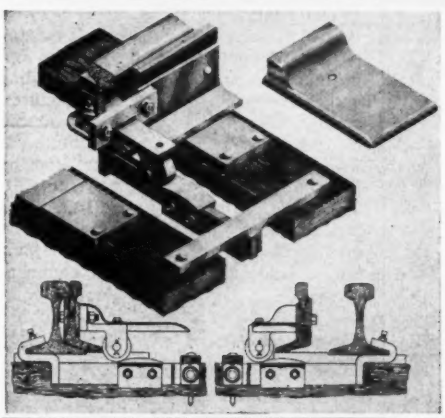

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YOU GET *4-cycle* DEPENDABILITY

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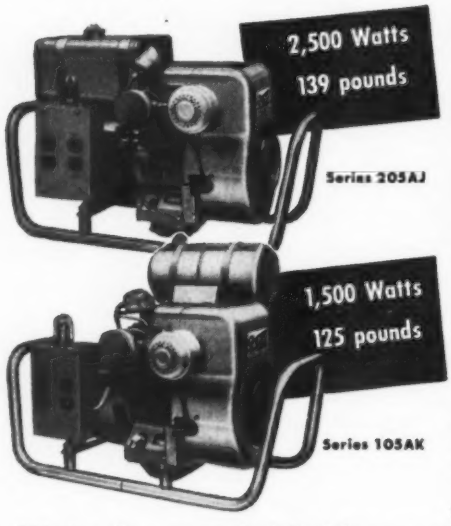

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Railway Personnel (Cont'd)

Bridge and Building

Robert E. Trickey, bridge and building foreman on the Bangor & Aroostook, has been promoted to superintendent of bridges and buildings succeeding **C. E. Garcelon,** whose promotion to superintendent of track and work equipment is noted elsewhere in these columns.

Special

C. E. Garcelon, superintendent of bridges and buildings on the Bangor & Aroostock, has been promoted to superintendent of track and work equipment with headquarters at Houlton, Me.

Obituary

F. A. Ernst, division engineer of the Western subdivision of the Pittsburgh division of the Baltimore & Ohio at Pittsburgh, Pa., died recently.

Association News

Maintenance of Way Club of Chicago

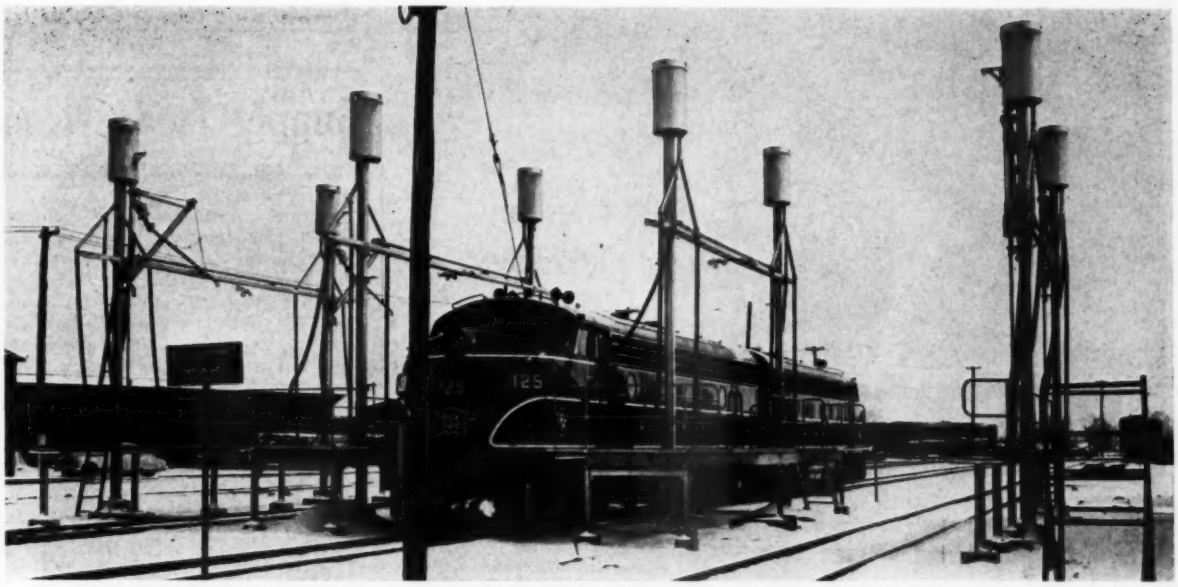
The February meeting, to be held on the 25th, will feature several moving pictures designed to bring out the opportunities for careers in railroading and engineering. One of the pictures, entitled "June Decision," was produced by the Railway Progress Institute. It will be preceded by brief comments by Holcombe Parkes, president of the RPI. The other picture, entitled "The American Engineer," depicts accomplishments of engineers in this country. Both films are in color and have sound commentaries.

American Wood Preservers Association

The 53rd annual meeting of the association will be held at the Conrad Hilton hotel, Chicago, April 29 to May 1. The president's reception will take place on April 28.

A highlight of the program will be a panel discussion on Results Type Specifications. The panel will discuss the reasons for such specifications, deficiencies of present specifications, and the advantages of Results, Type Specifications to the consumer.

In addition to the presentation of committee reports, there will be a number of addresses on current developments. Among these, H. B. Christianson, Jr., assistant chief engineer, Rock Island, will talk on the subject "A Railroad's Experience with Treated Wood," and J. B. Huffman of the University of Florida will talk on "Kiln Drying of Gum Crossties."



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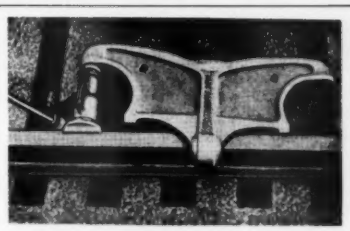

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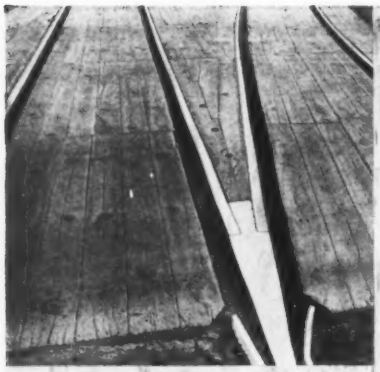

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Supply Trade News

Edward M. Gerulat has been appointed manager of service of the **Maintenance Equipment Company,** a division of **Poor & Co.,** with headquarters in Chicago. A native of Oak Park, Ill., Mr. Gerulat attended LaSalle Extension University, after which he worked for the Western Electric Company for 15 years. During World War II he spent 3½ years in the armed forces, during which time he attended

Edward M. Gerulat

Oregon State College, Yale University and served overseas for 1½ years. He entered the service of Maintenance Equipment Company in 1951 as service engineer, which position he was holding at the time of his recent promotion to manager of service.

Alfred C. Laessig, has been elected president of the **Unit Rail Anchor Company, Inc.,** Pittsburgh, Pa., a wholly owned subsidiary of **Hubbard & Co.**

Alfred C. Laessig

Mr. Laessig has been with the Hubbard & Co. since 1945. He started as Chicago district sales manager and later transferred to Pittsburgh to become general manager of the company's Tool

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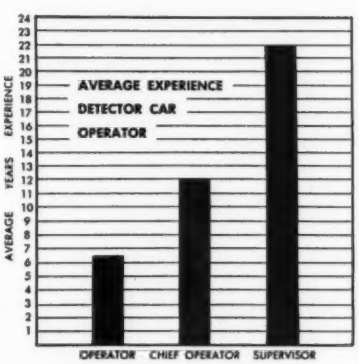
Someday he'll be a Sperry Detector Car Operator and will have the sole responsibility for making some 500 to 5,000 decisions a day. Right now he has a Chief Operator breathing down his neck as he learns the highly specialized art of detecting defects of rail in track and what they *mean*.



Training men as Detector Car Operators involves a considerable amount of screening even before they see a Detector Car. Intelligence, judgment, eyesight, perseverance and personality are some of the factors that govern the choice of men whose job it will be to test and protect the thousands of miles of rail in track against failures.

The minimum training period for Detector Car Operators is one year—with constant follow-up and study in techniques and procedures in every phase of testing. To give you an idea of the wealth of experience represented in a Sperry Car crew, we have charted the average number of years of service—(lower left) from Operator to Supervisor. It is impressive because their responsibilities are impressive.

The unusually small detail fracture shown below is a type of transverse defect which is extremely difficult to find. Its detection typifies the skill of highly trained Sperry crews.

This kind of specialization is yours wherever you use Sperry Rail Service. This collective experience, plus the most modern equipment that research and engineering can create, rides in every Sperry Car over thousands of miles of rail in track annually. Sperry Rail Service has pioneered the field of practical nondestructive testing for the railroad industry. Today Sperry offers America's most complete range of modern inspection instruments as well as a radio communication system designed specifically for railroads.

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Supply Trade News (Cont'd)

division. He has served as vice-president of Hubbard & Co. in charge of the Tool division. Before joining Hubbard he was employed by the New York Central, the Delaware, Lackawanna & Western, and the Woodings-Verona Tool Works.

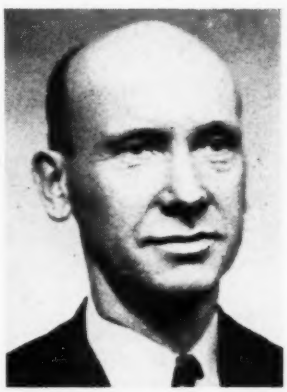
John Samson, formerly with the Nordberg Manufacturing Company and more recently sales engineer for **Eastern Railway Supplies, Inc.,** New York, has been elected vice-president in charge of sales of the latter company.

Lester E. Jordan has been appointed district engineer in charge of the **Portland Cement Association's** Philadelphia office. Mr. Jordan succeeds **R. M. Reindollar, Jr.,** who has resigned to join a Baltimore, Md., engineering firm.

James L. Holmes, formerly assistant maintenance engineer for the New York New Haven & Hartford, has been appointed representative of the Bird Tie-Pad division of **Bird & Son, Inc.,** East Walpole, Mass. Mr. Holmes succeeds **John H. Dooling,** who retired December 31, 1956.

J. W. Miller, connected with the sales and service engineering division of the **Pullman-Standard Car Manufacturing Company,** has been appointed sales representative of Pullman-Standard to operate out of the company's Birmingham, Ala., and Washington, D.C., sales office.

David M. Clarke has been appointed eastern manager for the **P. & M. Co.** and the **Maintenance Equipment Company,** divisions of **Poor & Co.,** with headquarters in New York. Mr. Clarke is a graduate of Lehigh University (1923) and worked seven years in the maintenance-of-way department of the Pennsylvania. He was serving as main-line assistant supervisor when he joined the Maintenance Equipment Company in 1930 as a service engineer, later being appointed also to the same position with the P. & M. Co. Subsequently, Mr. Clarke was appointed sales engineer for

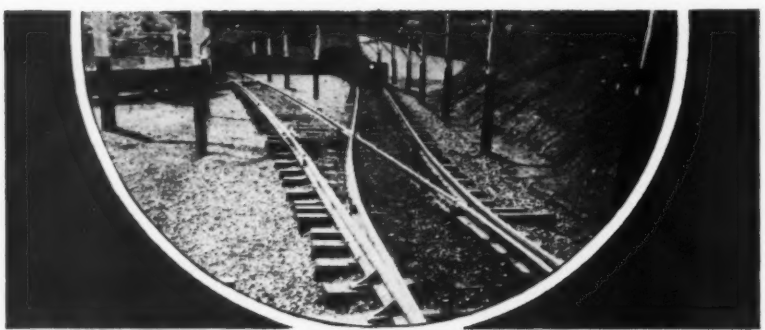


David M. Clarke

both P. & M. and Maintenance Equipment, and in 1953 he was appointed assistant eastern manager of both companies. He was serving in this capacity at the time of his recent promotion to eastern manager.

L. C. Daniels, who served as vice-president of the **Buda Company** prior to its acquisition by the **Allis-Chalmers Manufacturing Company** in 1953, has been named general manager of the Buda division, tractor group, of Allis-

***Thomas I. Moore,* who has joined the sales department of *True Temper Corporation's* Railway Appliance division as western sales manager. Mr. Moore, who has had 10 years' experience in the railway supply field, will make his headquarters at Chicago.**



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save time and money with ONE power unit

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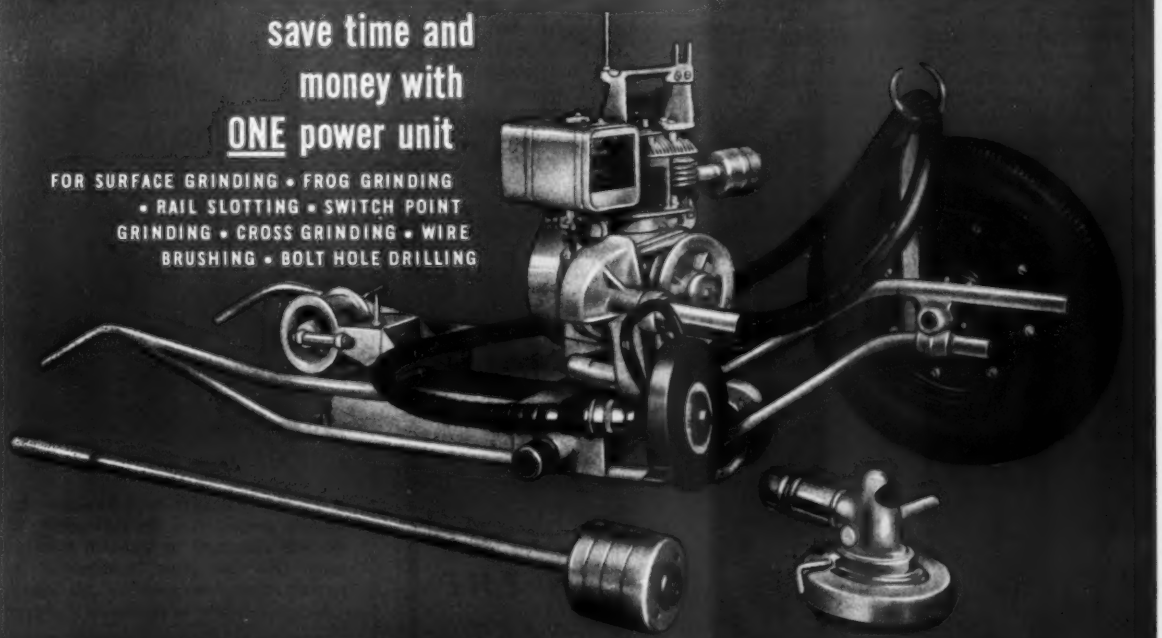

Combination Rail Grinding Model 23 has 7 great features that make it right for you!

- Powerful gasoline engine develops 8¼ hp.
- Wheels insulated against interference with signal systems.
- Outriggers available to fit any gauge track.
- Entire unit rolls easily on track, allows machine to follow operator.
- Wheelbarrow mounting with pneumatic tire for easy mobility; can be moved off track by one man.
- Patented ball slip-lock connection for quick change of attachments.
- Pull-up crank starter for fast, kick-free starts in any weather.

MODEL 23 Rail Grinder. *Single-cylinder, 4 cycle, air-cooled gasoline engine. Horsepower ratings—6½ hp. at 2200 rpm.; 7¾ hp. at 2700 rpm.; 8¼ hp. at 3200 rpm. Welded tubular steel frame, 20" x 4" pneumatic wheel. L. 83", W. 30½", H. 34" 190 lbs. Includes outrigger, ⅜" x 10' flexible shaft, 10' flexible shaft housing.*

Now! Cut maintenance costs!

Here is one of the most powerful, most versatile railroad maintenance machines ever designed! It is the product of 30 years' experience. Designed to cut maintenance costs, it has been tested and proved on America's leading railroads.

This famous Combination Rail Grinder, Model 23, is produced with the same quality and precision that have made Remington—the newest name in power tools—famous for 141 years in sporting firearms and ammunition. This Rail Grinder makes it possible for one man to do a wide variety of jobs with no time-consuming conversions necessary, because our patented ball slip-lock connection enables the operator to change attachments instantly. No threading to bother with.

For complete information about Remington's specialized Mall railroad tools, just send the convenient coupon below.

Remington Mall®

MALL TOOL COMPANY
Division of Remington Arms Company, Inc.
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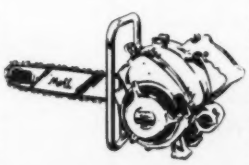
⅜" impact wrench specially designed for railway work.



Gasoline, electric and pneumatic chain saws for every requirement.

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MALL TOOL COMPANY
Division of Remington Arms Company, Inc., Dept. C-38
25000 S. Western Ave., Park Forest, Illinois

Please send me your FREE railroad tool catalog.

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RAILROAD _____

STREET _____

CITY _____ ZONE _____ STATE _____

Supply Trade News (Cont'd)

Chalmers. He succeeds **R. K. Mangan,** president and general manager, who retired January 1. **Owen J. Higgins** has been named general manager of the Buda division's Harvey, Ill., works.

The **American Tractor Corporation** has been consolidated into the **J. I. Case Company,** Racine, Wis. **Marc B. Rojtman,** president of American Tractor, has been elected to the newly created position of executive vice-president and general manager of J. I. Case. Mr. Rojtman will have authority over, and responsibility for, the overall operation of the newly merged company. In addition, he has been elected to the board of directors, and will serve on the Executive committee.

Air Reduction Sales Company, a division of **Air Reduction Company, Inc.,** has acquired the assets and business of **Jackson Products, Inc.** of Detroit, Mich. The Jackson Products Company manufactures welding electrode holders, welding helmets, safety goggles, and other welding supplies for the electric arc-welding field. Present distribution channels will be maintained by the Air Reduction Sales Company.

Roger B. Coleman, who has been appointed district manager at Chicago for the **Chipman Chemical Company** (*RT&S*, Feb., p. 67), attended Yale University and joined the armed services in 1943. He became a fighter pilot with the United States air force, serving in the European theater. Mr. Coleman entered the service of the Chipman Chemical Company in May 1947 as a spray train operator. In the following year he was transferred to the sales department with headquarters at Chicago, and in 1952 he became eastern

Roger B. Coleman

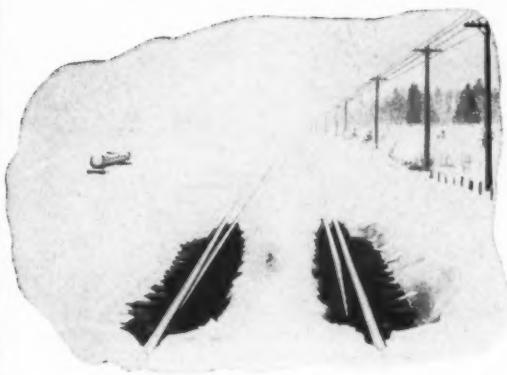
sales representative with headquarters at Bound Brook, N.J. In November 1955, he was advanced to assistant sales manager with the same headquarters. His appointment as district manager at Chicago became effective on January 1.

George M. Cooper has been appointed representative for the Railway Equipment division of **Nordberg Manufacturing Company,** with headquarters at Springfield, Mo., effective February 1. He has taken over the territory and accounts formerly served by **Will H. Reaves,** St. Louis. Mr. Cooper was formerly vice-president and manager of

George M. Cooper

Eastern Railway Supplies, Inc., New York, which firm represents Nordberg in the northeastern part of the United States and eastern Canada. Previously, he had represented American Brake Shoe Company at Houston, Tex., and the Ramapo Ajax division of American Brake Shoe in New York. He joined Eastern Railway Supplies in 1944.

SUBURBAN PROPANE GAS SERVICE



KEEPS THE SWITCHES OPEN IN THE EAST

The choice of most railroads which use Propane for their Eastern switch heaters is dependable Suburban Propane Gas Service, because it offers many advantages:

1. Suburban Propane's Industrial Department will handle all details and arrangements to take care of YOUR switch heating problem.
2. Widespread Facilities—84 bulk plants in 15 eastern states.
3. Engineering Services—Specialized staff to assist you.
4. Experienced Personnel—Delivery and service employees are carefully trained and have a wide range of LP-Gas experience.
5. Finest equipment—A fleet of modern, specially designed tank trucks assures you dependable delivery.
6. Ample Supply—Suburban Propane receives over 1,000 tank cars of propane a month.
7. Low Investment—LP-Gas storage tanks are loaned to railroads.

For complete information about Suburban Propane Gas Service for switch heating or for any other use, write to Dept. RW2, Suburban Propane Gas Corporation, Box 206, Whippany, N.J.

SUBURBAN PROPANE GAS CORPORATION
GENERAL OFFICES WHIPPANY, N. J.
The Gas Company Beyond the Gas Mains

PLASSER
High Capacity HYDRAULIC TAMPER

"One man tamps 1100 ft. an hour"

says Canadian M/W Engineer

". . . the total time to tamp 11 rails with 24 ties to panel was 22 minutes for one insertion . . . It would appear that the machine was capable of tamping 1100 feet of track (per hour) if given complete freedom to work. To date the track has stood up well."

The PLASSER VKR-01 HIGH CAPACITY HYDRAULIC TAMPER is the latest development in track maintenance, incorporating hydraulic drive and control. It assures highest performance, accuracy and simple handling, resulting in absolutely uniform compacting of ballast.

Tamping units consist of 16 units made of tough, wear-resistant steel which, through vibration and compression, work the ballast under the ties. It is especially effective in loosening fouled or cemented ballast beds. It works with minimum interruptions; a compressed-air elevating device moves it off-track in two minutes. Exceptionally quiet in operation.

8 ADVANTAGES

1. Entire weight of machine rests on already-tamped track.
2. Each tool packs to full pre-set pressure independently of other tool pairs; results in uniform ballasting.
3. Automatically increases tamping pressure at joints and high rails at curves.
4. Adjustment for deep or ordinary tamping may be made while running.
5. Good "trackability"; rubber-cushioned axles damped vibration.
6. Easy, simplified push-button operation helps personnel efficiency.
7. Diesel-powered compressor; quiet operation.
8. One-man operation; exceptionally high performance.

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PLASSER RAILWAY MACHINERY

TO THE EDITOR . . .

Readers are urged to avail themselves of the opportunity to express themselves concerning the contents of this magazine.

Says He Gets Inquiries From All Over the World

Chicago

TO THE EDITOR:

Recently we received a letter of inquiry from the chief engineer of a South American railroad. Preceding our street address were the letters "RTS," indicating that the communication had been inspired by a "New Products" write-up in *Railway Track and Structures*. (In this particular case, the letter, received in January, 1957, referred to a story in your August, 1956, issue.)

As I replied to the inquiry, I recalled a good many other foreign inquiries which had stemmed from either an advertisement or a publicity story in your publication, and just for fun I checked into it. I was quite surprised at the extent of your foreign coverage, as indicated by our records for the past few years.

Last February, for example, we ran an ad on our Converto Dump Unit—and within a few weeks received an inquiry from the Norwegian State Railways. Previous to that, an official of the British Railways had written us from Somerset, England, also in response to a Converto ad.

As for our Hayco Track Scopes—we have had good inquiries from Cuba, Formosa, Hounduras, New Zealand, and the following provinces of Canada: Alberta, British Columbia, Manitoba, Ontario, Quebec and Saskatchewan. All of these have been from active track officers—just the kind of men we like to be in contact with.

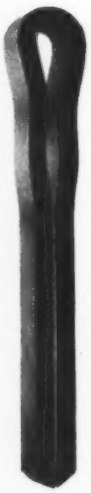
I think this showing of *Railway Track and Structures* readership in faraway places is worthy of mention, and I thought you might like to know about it.

BRICE E. HAYES
The Brice Hayes Company

(According to the latest statement of the Audit Bureau of Circulations, *Railway Track and Structures* has 1045 subscribers outside of the United States and its possessions. Of these, 675 are in Canada, and the remainder are in other foreign countries—Editor).

TIE PLATE LOCK SPIKES . . . GAGE LOCK SPIKES

Hold Gage—Extend Tie Life
Reduce Maintenance



Tie Plate Lock Spike

Gage Lock Spikes in Track

Gage Lock Spike

TIE PLATE LOCK SPIKES hold tie plates firmly in place on cross-ties and bridge timbers. They are quickly and easily driven or removed with standard track tools. Driven to refusal, the spread shank is compressed by the walls of the hole. Plates are held against movement under spring pressure. Play between spike and hole is eliminated–gage is held and plate cutting is overcome.

The GAGE LOCK SPIKE is a rail spike, as well as a plate fastening, for use on tangent track and light curves where lateral thrust can be overcome with only two spikes at each plate rather than four cut spikes. It possesses the same features and advantages as the Tie Plate Lock Spike. The Gage spike is offset at the tie plate surface to avoid thrust and wear from the edge of the rail base. The use of Gage spikes saves up to 13,000 spikes per mile and potential damage to the tie from spiking and splitting is drastically reduced.

BERNUTH, LEMBCKE CO., INC.
420 Lexington Avenue, New York 17, N. Y.

Helps From Manufacturers

The following compilation of literature —including pamphlets and data sheets —is offered free to railroad men by manufacturers to the railroad industry. To receive the desired information, write direct to the manufacturer.

RUST PREVENTION. Incorporating the manufacturer's 35 years' experience in rust prevention, a new catalog—the Rust-Oleum 1957 Coatings Manual—has recently been made available. The 32-page, four-color provides a practical, workable guide for buyers and users of protective coatings and features the results of over two years of intensive research by engineers and technicians in areas where conditions of excessive moisture, salt spray, fumes, gases, weather, and other rust-producing agents are severe. It contains information and recommendations which enable the user to determine quickly and accurately the specific coatings needed to protect practically any rustable metal surface. The catalog contains full-color application photographs and gives ideas for protecting girders, tanks, water, steam and brine piping, stacks, boilers, fences, gutters, roofs, equipment, etc. One hundred actual color chips show the range of colors available in primers, indoor and outdoor short oil coatings, and long-oil type coatings. (Write: *Rust-Oleum Corporation, Dept. RTS, 2799 Oakton Street, Evanston, Ill.*)

TRACK MACHINES. A two-page, two-color circular has recently been made available describing the manufacturer's tamping power jack, automatic gang tamper and Trakliner. Action photographs of the three machines are presented as well as text describing what the manufacturer calls its "mechanical muscles." (Write: *Nordberg Manufacturing Company, Dept. RTS, Milwaukee, Wis.*)

How to

make Track Last Longer

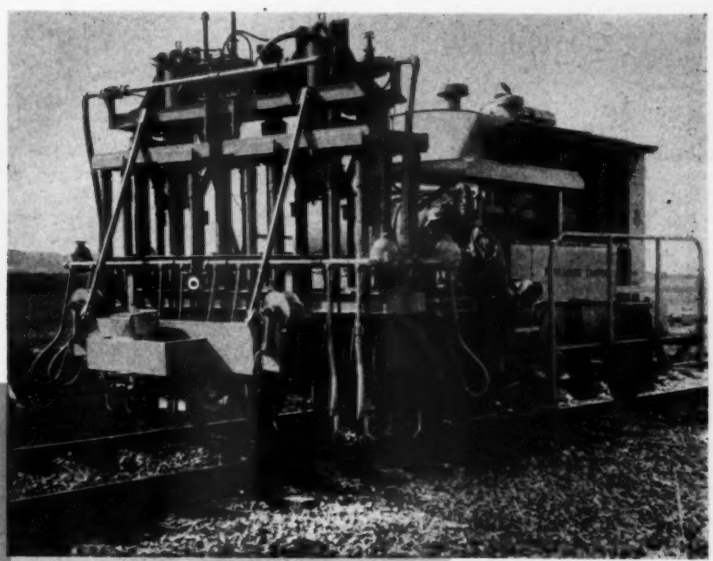
—without Back Surfacing

Economies of mechanized maintenance are multiplied when the job is done to last. For example, one railroad methods and cost control authority estimated that the solid track put up by a McWilliams Tamper will last three years without back surfacing in a specific district . . . compared to two years for the next most effective tamper.

Also, ballast properly positioned . . . as only the McWilliams Ballast Distributor can do it . . . contributes to making the tamping job last longer.

McWILLIAMS BALLAST DISTRIBUTOR

Machine places ballast in desired quantity and depth in exactly the proper position, leaving no ballast to be removed after tamping.



McWILLIAMS TIE TAMPER

Tamper uses 16 air-operated tools to finish tamp any raise up to 6", at speeds up to 720 feet per hour.

Railway Maintenance Corporation

PITTSBURGH 30, PA.

McWilliams Mole and Super Mole . . . McWilliams Tie Tamper, Crib Cleaner and Ballast Distributor . . . TieMaster . . . LineMaster . . . SpikeMaster . . . Tie Unloader . . . BoltMaster

Q AND C CLAMPS ASSURE SAFETY

Q and C Universal Type Guard Rail Clamps have sturdy yokes of drop forged heat treated steel designed of "I" beam construction to insure extra strength and holding power.

One size of yoke is suitable for a range of rail sections which simplifies and reduces your inventory.

Order now for early delivery.

OTHER Q AND C PRODUCTS:

Manganese Guard Rails, Switch Point Guards, Car Stops, Step Joints, Derails, Gauge Rods, Car Replacers, Snow Flangers and Plows, Skid Shoes, Anti-Slip Rail Tongs, Flangeway Brackets, Electric Snow Melters, Gauging Tools, Foot and Heel Guards.

Serving Railroads Since 1886.

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Advertisers IN THIS ISSUE

A

Achuff Railway Supply Co. 98
Allis-Chalmers Mfg. Co. 27
American Brake Shoe Company, Railroad Products Division 16-17
Armco Drainage & Metal Products, Inc. 6
Austin-Western Works, Construction Equipment Division Baldwin-Lima-Hamilton Corporation 45

B

Baldwin-Lima-Hamilton Corporation, Austin-Western Works, Construction Equipment Division 45
Bernuth, Lembeke Company, Inc. 108
Bethlehem Steel Company 3
Bird & Son, Inc. 12
Bogle, R. H., Company 34
Brice Hayes Company 90

C

Caterpillar Tractor Co. .. Inside Back Cover, 95
Chipman Chemical Company 50
Colorado Fuel & Iron Corp. 22-23
Cullen-Friestedt Company 46

D

Daubert Chemical Company 87
Dow Chemical Company 8-9

F

Fairbanks, Morse & Company 39
Fairmont Railway Motors, Inc. 54
Foster, L. B., Company 98

G

Gardner-Denver Company 10
General Chemical Division, Allied Chemical & Dye Corp. 56
Gravely Tractors, Inc. 102

H

Hyster Corporation 30

I

Ingersoll-Rand 5
Integrity Tool & Equipment Co. 101
International Harvester Company 48-49

J

Jackson Vibrators, Incorporated 24-25
Jordon, O. F., Company 83

K

Kershaw Manufacturing Company, Inc. Inside Front Cover
King Tester Corporation 90
Koehring Company 43
Kohler Company 93
Koppers Company, Inc., Tar Products Division 38

L

Le Roi Division 42
LeTourneau-Westinghouse Company 51, 91
Lewis Bolt & Nut Company 99
Lincoln Electric Company 84
Linde Air Products Company, Railroad Department, A Division of Union Carbide & Carbon Corp 14

M

Maintenance Equipment Company 11
Mall Tool Division, Remington Arms, Inc. .. 105
Mannix International Inc. 4
Matisa Equipment Corp. 32
Mid-West Forging & Manufacturing Company 35
Moss Tie Company, T. J. 102
Motorola Communications & Electronics, Inc. 53

N

National Aluminate Corporation 13
National Lock Washer Company 47
Nolan Company 99
Nordberg Manufacturing Company 36-37

O

Onan & Sons, Inc., D. W. 100
Orton Crane & Shovel Co. 19-20
Osmose Wood Preserving Company 100

P

Pettibone Mulliken Corp 85
Plasser Railway Machinery Company 107
P. & M. Company ..... Front Cover
Pullman-Standard Car Manufacturing Company 21

Q

Q & C Company, The 110

R

Racine Hydraulics & Machinery, Incorporated 41
Rail Joint Company 52
Railroad Materials Corporation 99
Rails Company, The ..... Back Cover
Railway Ballast Conditioning Corporation ... 31
Railway Maintenance Corporation 109
Railway Track-work Company 44
Reade Manufacturing Company, Incorporated 26
Republic Creosoting Company 104
Research Engineering Associates 99

S

Schield Bantam Company 88
Snow, T. W., Construction Company 101
Socony Mobil Oil Company, Inc. 29
Spray Products Corporation 98
Standard Oil Company of Indiana 89
Speno, Frank, Railroad Ballast Cleaning Co., Inc. 28
Sperry Rail Service, Division of Sperry Products, Inc. 103
Suburban Propane Gas Corporation 106

T

Teleweld, Inc. 92
Templeton, Kenly & Company 93
Tredegar Company 101
True Temper, Railway Appliance Division .. 81

U

Union Switch & Signal, Division of Westinghouse Air Brake Company 40
United States Borax & Chemical Corporation Pacific Coast Borax Company Division ... 97

W

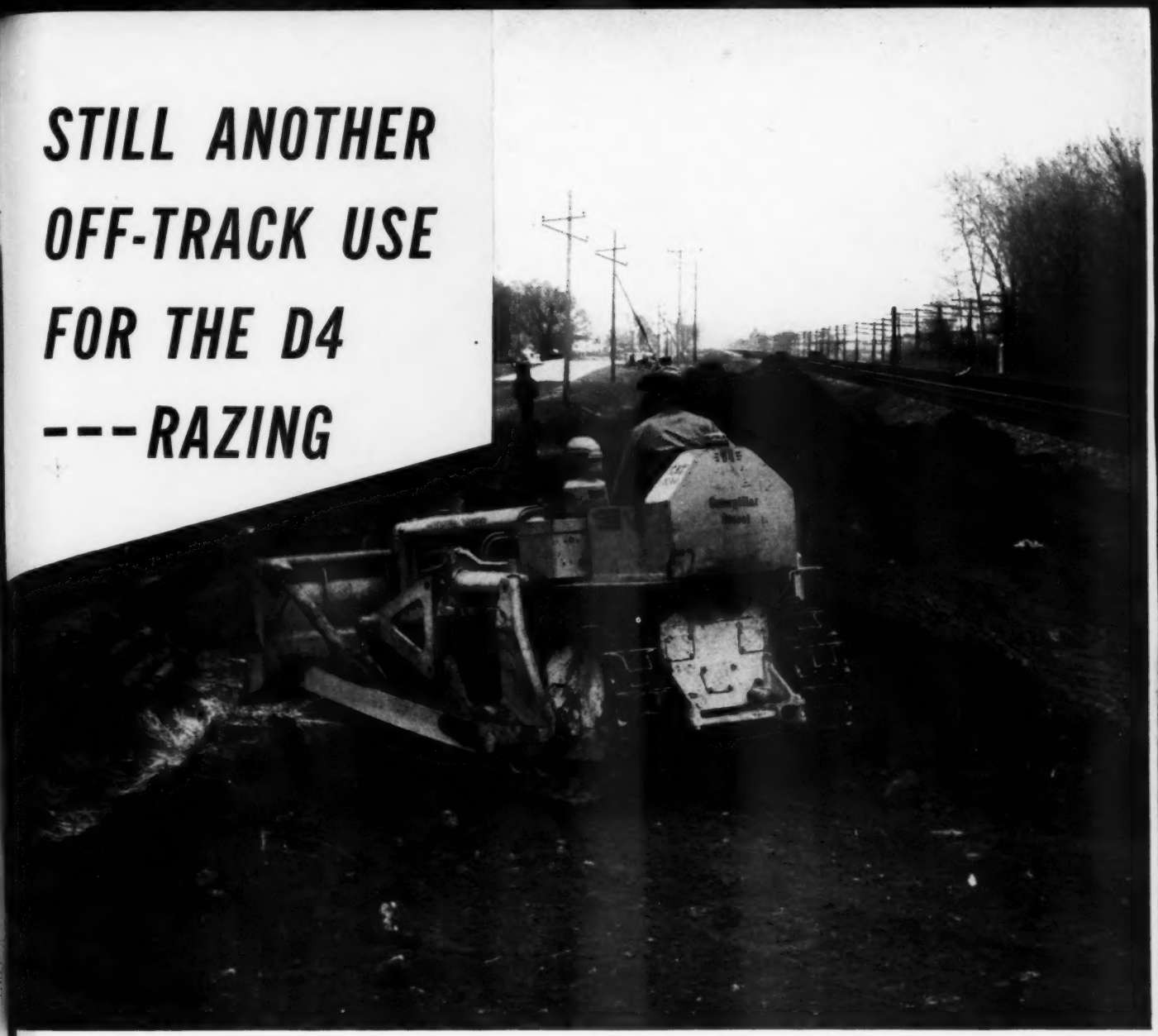
Western Railroad Supply Company 15
Wisconsin Motor Corporation 87
Woodings-Verona Tool Works 7
Woolery Machine Company 93

Z

Zone Company, The 79

"This index is an editorial feature, maintained for the convenience of readers. It is not a part of the advertiser's contract and Railway Track & Structures assumes no responsibility for its correctness."

STILL ANOTHER OFF-TRACK USE FOR THE D4 ---RAZING



Railroad men generally think of the many *construction* jobs a CAT* D4 Tractor can do. But here the off-track unit proves it can tear down as well as build. Working with a shovel, the D4, owned by John Dehner, Inc., Fort Wayne, razed an old pumping station near Hanna, Indiana, quickly and neatly. The job included digging out some 20,000 feet of water pipe.

Tomorrow this hard-working machine may be widening cuts, filling or ditching; building bank or widening shoulders. In the winter, it removes snow. The D4 can be used with a bulldozer, a No. 40 Scraper, or with many other attachments.

Equipped with a No. 4S Bulldozer, it will handle 184 loose yards per hour on a 50-foot haul. And you can increase this by 75% during downhill 'dozing and trenching.

Using a No. 40 Scraper, it can haul 4.5 cubic yards heaped. This tractor-scraper unit is designed to self-load efficiently even in confined areas. For the D4 gives you full power on turns. When one steering clutch is released, full power is transmitted to the other track. In that way maximum power is available for pulling heavy loads on turns.

And the D4 is built to take it. For instance, it now can be ordered with the exclusive Caterpillar oil clutch. That means clutch adjustments are rarely required. You get increased dependability and reduced service and maintenance costs.

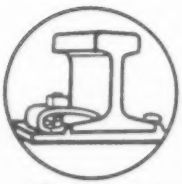
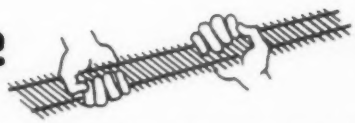
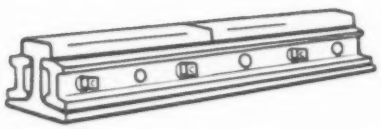
For rugged, versatile off-track equipment, see your Caterpillar Dealer today. He'll show you—on your own job—how you can increase production and lower costs.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

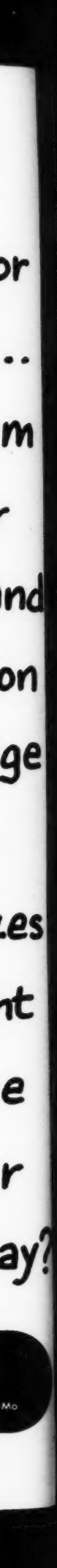
*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

NAME THE DATE... YOUR DEALER WILL DEMONSTRATE

This  compression rail anchor stops rail movement in both ... directions ... by putting a firm two-way squeeze  on your rails. It halts creepage coming and going. It maintains proper expansion  gaps... holds line and gage ...insures precise operation of remote controls. It fits all rail sizes ... is excellent for welded and tight rail. Our brochure

gives the complete story. Why not get your copy by dropping us a line today? Just address ...

The **RAILS** Company

RAILS CO.

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